Treatise on Opthalmy.

PRICE FOUR SHILLINGS.

A TREATISE ON OPTHALMY;

AND THOSE

DISEASES WHICH ARE INDUCED BY INFLAMMATIONS OF THE EYES.

WITH

NEW METHODS OF CURE.

BY
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SURGEON.

PART THE SECOND.

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TREATISE

ON

OPTHALMY, &c.

PART THE SECOND.

The Cure of Opthalmy continued.

HAVING, in the preceding part of this Treatise, taken notice of the different exciting causes of Opthalmy, which act by immediately, and directly stimulating the irritable fibre more than usual, and pointed out the most eligible means of removing them; it now remains for me, to treat on the Opthalmy, proceeding from a deficiency of stimulus, occasioning an accumulation of the irritable principle, which I have supposed to be the most usual cause of inflammation.

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Among other reasons, for my inclining to the opinion, that a deficiency of the usual stimuli, is the most common cause of Opthalmy, is, that a diminished quantity of stimulus, or an under proportion of caloric, so often produces inflammatory affections of various parts of the body, as general fever, (synocha), peripneumonia, cynanche tonsillaris, rheumatism, and catarrh. (Vid. p. 21 to 25.)

With respect to a deficiency of excitement, being the cause of common catarrh, it is a curious fact, that on a person being exposed to wet, as riding in the rain till the cloathes are soaked, in a very short time, every symptom of an incipient catarrh is perceived, which will appear to be coming on with violence; but that on speedily changing the cloathes, in a few hours every appearance of it will be removed. This, I have repeatedly experienced, and have observed, that with a fulneſs, dryneſs, and heat of the internal membrane of the nose, the skin was pale and cold;

but that on keeping in exercise till I had an opportunity of changing my drefs, and wiping the skin dry, a pleasant glow was shortly felt over the whole body, which presently diminished the sensation in the nostrils, and the catarrh vanished. If, however, the wet cloathes were not taken off for several hours, friction, and a warm drefs, were not able to produce a sufficient action of the skin to exhaust the accumulated irritability, when the catarrh became established.

When the change of temperature is sudden and great, such an irregular action takes place in the various orders of vefsels, that disease is almost inevitable. Richard Edwards, of Liverpool, a healthy young man, 28 years of age, with black hair and a ruddy complexion, went into some fresh water, which was about the temperature of mild weather, viz. about 40 degrees, by the thermometer. He continued in this water 34 minutes, and then went into a *warm bath* at 90 degrees. Here, for the

first moments, he felt very warm, but his hands and feet gave him pain, and in two minutes, being still in the warm bath, he was seized with *shiverings*. The water was now increased in heat six degrees, but our experimentalist still felt cold; the heat was further increased 10 degrees, and after remaining in the warm bath half an hour, he came out sick and very languid, his pulse was quick and feeble. He paſsed a very feverish night, and the next day had wandering pains over his body, with great weakness, resembling the *incipient stage of a fever*.

Now it can make little difference, allowing for the superiority in the conducting power of water, whether a person paſs from cold air or cold water, into warm air or warm water, and it is frequently observed, that persons who have long been riding in the cold and wet, experience the *firſt symptoms of fever* upon coming into a *warm room*, sitting *near the fire* or *drinking spirits*.

A patient mentioned to Dr. Beddoes, among the particulars of her complaint, a circumstance which seems, both on account of its singularity, and the illustration it affords of an important principle in animal nature, to be worth recording.

Her constitution was one of those, where a small irregularity in diet, exposure to cold, &c. produced pain and disorder in the bowels, sometimes arising to a severe fit of the cholic. The patient having one day occasion to wash some butter, conceived, that by removing her hands, occasionally, out of the *cold spring water*, into *warm water*, she should have a better chance of escaping the customary complaint in her bowels. She accordingly heated some water, as hot as she could bear it, and from time to time, transferred her arms from the *cold*, into the *hot water*, immersing them pretty deep in the latter. It was on a Saturday, in spring; the next morning she was awakened by a violent pain under each axilla, and was likewise sensible of a

considerable swelling in the same part. The inflammation continued, and by Tuesday morning each of the tumours had increased to the size of a man's fist. They soon afterwards broke, and discharged a large quantity of pus. In about a fortnight both wounds were healed. These circumstances indicate a true phlegmonic inflammation, which, I suppose, may be safely ascribed to the sudden and alternate action of *heat* and *cold*.

Mr. Clarkson, in his Essay on the Impolicy of the African Slave Trade, informs us, that when slaves are brought on board, the seamen, to make room for them, are turned out of their apartments, and sleep for the most part on the decks, from the time of their leaving the coast of Africa, (where the *days* are *excessively hot*, and the *dews excessively cold* and *heavy*,) to their arrival at the West India Islands. From this bad lodging, he proceeds, and this continual exposure to *colds* and *damps*, and *suddenly* afterwards to a burning *sun*, *fevers* origi-

nate, which carry many of them off! This fever attacks the whole frame, but the *eye* commonly feels the inflammation most.

In Egypt, the inflammation of the *eye* is extremely frequent, occasioned, it has been observed, by the succession of *hot days* to *cool nights*, where it is the custom to sleep, during the summer, in the open air. The frequency of opthalmic complaints in Egypt, has also been assigned to nitrous or saline particles, conveyed to the eye by the agitation of the sand, which, no doubt, very much increases the danger of diseased action being brought on by the former cause, and is often solely sufficient to produce it.

Allowing, that the greater action which takes place, in Opthalmy, is owing to an increase or accumulation of the irritable principle; it will follow, that this action is to be diminished, either by preventing the system from affording its usual supply, by those means which have a general effect upon the whole body, or by exhausting the

irritable principle in the part, quicker than it can be supplied. The chief of those things, which act by diminishing the formation of the irritable principle, are bleeding, evacuants, and low diet; but as it has been suggested that the Opthalmy is only a *topical complaint*, the persevering in those means must unnecessarily lower the constitution, and by acting in a secondary manner on the diseased part, the effect produced will not be equal to the violence of the remedy.

It remains, therefore, that we should consider, how far it is possible to remove the complaint, by exhausting the irritable principle quicker than the system supplies it, and by that means abating the action of the part. This may be done,

First, by the continued application, for several minutes, of a *moderate stimulus*, immediately to the part affected, and then *suddenly* substracting it.

Second, by the *sudden* application of a *strong* stimulus.

Every medicine may be called stimulant, but there are very few which can, with safety, or the probability of advantage, be applied to the eye, in its irritable inflamed state. In making choice of them, it is requisite, both that the quantity can be easily regulated, and that, on discontinuing its application, its effects may *immediately subside*. These neceſsary qualities will entirely forbid the use of metallic calces, substances containing eſsential oil, all kinds of insolubile powders, and lotions that are not *perfectly* TRANSPARENT.

After making use of the stimulant, so much depends upon a *sudden ceſsation* of every unneceſsary irritation, that care must be taken, not only that its operation on the eye should be *suddenly discontinued*, but that the eye and the lids should not be rudely preſsed upon, during its application; otherwise, so much irritation will be produced, the effects of which *gradually* ceasing, the salutary effects of the medicine will be prevented. The injury done to

the eye in its inflamed state, by *preſsure* or *rude fingering*, has not been sufficiently attended to in the use of applications; but I am so convinced of the absolute neceſsity of avoiding every irritation, that I ſhall be more particular than, probably, on a first view, might be thought neceſsary, in giving directions, by which, in applying them, as little violence as poſsible may be done to that part.

To diminish the irritable principle by my first method, the best stimulants that offer themselves are—

A, Caloric, applied by means of water; and—

B, Pure alcohol, diluted with water, either with or without a ſmall quantity of camphor.

In making use of caloric to remove an inflammation of the eye, a wine glaſs should be filled to the brim with water rather warmer than is *pleasant*, yet not to give pain, and the eye immersed in it for a minute, keeping it open by looking at the

bottom of the glaſs, and moving the eyelids freely in the water, unleſs the motion is attended with pain. When the minute is expired, the glaſs is to be again filled with warm water, and the eye put in it for a like time, when it muſt be withdrawn, and immediately wiped dry. It may be repeated three or four times a day; or in some few instances, in which the pain is almost continual, it may be applied every hour.

I have just mentioned the propriety of not injuring the eye by any unneceſsary violence; and here it may be proper to say, that the patient should be careful not to preſs the edge of the glaſs forcibly against the eyelid; and as there is an unsteadineſs in holding the glaſs for some time in the hand, he should, having gently placed the edge of the glaſs between the eye and the cheek-bone, preſs another part of it against the fronted bone between the eye-brows.

Until very lately, it was the general rule of practitioners to recommend the use of cold water, and cold applications, in

inflammatory complaints of the eyes; but their patients having found, particularly in chronic affections, that, after the use of it, the eyes frequently felt hot, stiff, and painful, though they were perfectly easy before, they were induced to reverse the mode of treatment, and make trial of *warm* water, which they soon discovered had none of the unpleasant effects of the *cold*, but even tended to remove the inflammation, and strengthen the eye.

Medical men, from this, took the hint, and now sometimes advise the use of warm water in disorders of the eyes. Their conviction, however, that as a general remedy cool applications are preferable, is, I believe, as firm as ever; and those cases in which they have observed the marked good effects of *warm* water, after seeing the inutility of *cold*, they ascribe to some particular idiosyncrasy in the constitution, rather than to the real cause, so difficult is it for us to vary our mode of reasoning, which for a long time we have considered as just.

I have several times, of late, heard of warm water being recommended by medical men, in complaints of the eye; but Mr. Ware, to whom the public is much indebted for many improvements in this branch of his profeſsion, was the first who publicly recommended it, in certain chronic complaints, with defect of vision. He mentions it* with some little degree of hesitation, and accounts for its salutary effect by a mode of reasoning to which I cannot accord.

In speaking of certain cases, in which "the sight is so weak that every attempt to "read or write occasions great uneasineſs, "and the person is disabled from pursuing "the common concerns of life, yet no "alteration can be perceived in the ap-"pearance of the eye, from that of one "whose vision is strong and useful;" and, after mentioning the difficulty of managing them, and recommending different applica-

* In "Additional Remarks on the Opthalmy," publiſhed at the end of "Remarks on the Fistula Lachrymalis," 1798.

tions, he adds, "in others, after this oint-
"ment, and various other remedies, had
"been applied for a long time, without
"affording any relief, I have seen great
"afsistance afforded by applying the corner
"of a handkerchief to them night and
"morning, dipt either in *hot water*, or in a
"strong infusion of chamomile flowers, as
"hot as the eye can bear it. The effect
"produced by this application is often
"*highly grateful*, both in *cooling* and
"*strengthening* the part to which it is
"applied.

"It may strike the reader with some
"surprise, that hot applications should be
"recommended, in order to strengthen a
"weakened organ; it being the more
"usual opinion, that hot remedies have a
"tendency to relax those parts to which
"they are applied. It is well known,
"however, that the evaporation of liquors
"is increased by heat, and that cold is
"generated during the process of evapora-
"tion; if, *therefore*, a *remedy* be applied

"to a *heated part* during the state of its "evaporation, it is not unreasonable to "expect that the quicker will be the cool-"ing effect, which the remedy produces, "and in proportion as a heated part is "cooled, it often happens that the strength "of that part is increased.*

"The application of *hot water* to a "*weak eye* has repeatedly been experienced "to produce this effect; but I *think* I have "found a hot infusion of chamomile flowers "still more serviceable. And if the eye "be in much pain, a hot decoction of "white poppy heads is preferable to either "of them, to which I have sometimes "added with advantage a fourth or even "a third part of brandy or some other "spirit.

"But having taken the liberty to pro-"pose the application of hot remedies as

* I object, *in toto*, to this supposed *modus operandi*, but there seems also some confusion in the reasoning, probably from an oversight in the printing, for heat appears to be the remedy, and not the remedy applied to the heated part.

" occasionally useful to a weak eye, I feel " it incumbent on me to add, that it is not " always easy to determine where the " cause of the weakness is imperceptible, " whether hot or cold applications will " afford the greatest aſsistance." Mr. W. then mentions the case of a young lady who had a great weakneſs in her sight without any visible appearance of disease in the eyes, who, after making trial of a great variety of medicines and applications, he, in a short time, cured by fomenting the eyes night and morning, with a hot infusion of chamomile flowers, " the application " of which afforded her almost instant " relief."

In using warm water for a complaint in the eyes, it is generally recommended that the end of the towel should be dipt in the water, and held to the eye for two or three moments, then dipt again into the water, and re-applied twenty or thirty times in quick succeſsion, moistening the cloth again at every fresh application.

By the above means, heat is applied to the eye only through the medium of the lids; the caloric in the cloth is very soon dissipated, and from the frequent change of the water, its action becomes irregular; on these accounts, in all cases except where the lids are a good deal swelled, I prefer the use of a wine glass filled with warm water, which will be found to be more pleasant, steady, and uniform in its operation.

Although I have just said, that patients have discovered the ill effects of cold water in *chronic affections* of the eyes, I wish it not to be understood that it is more proper in those cases than in a recent inflammation; as I believe the fact to be just the contrary. If, in a violent Opthalmy *cold water* is applied, temporary ease, and a grateful coolness is experienced; but immediately on discontinuing its application, an *increased* unpleasant heat, or rather burning, is felt, which continues, in general, for a length of time, in proportion to the

duration of its application; ought not this to have taught every one the impropriety of cool applications? But their senses must have been deceived by the pleasant coolneſs remaining impreſsed on the mind, when the subsequent heat, though greater in degree, has been attributed to the violence of the inflammation. In the Chronic Opthalmy, as the eye is not *in pain* or unpleasantly warm, previous to the application of the cold water, yet feels stiff and hot afterwards, patients, with great apparent reason, have attributed those effects to the *coolneſs* of the water, which is proved to be the fact, from *warm* water producing no such sensations.

Although the application of warm water, in Opthalmy, is now occasionally recommended by a very few practitioners, yet the generality of them strictly adhere to cool applications; I am, however, persuaded, that were they to make trial of a liberal use of warm water, their patients would experience greater ease, and the eyes would

feel more *cool* than after cold. In some few cases, I confeſs, after making use of cold and warm applications alternately, the preference has been given to the cold, but that is far from being a common occurrence; and I have generally been inclined to attribute it to too ſlight an application of either to produce any very sensible effect; or to the conviction in the patient's mind, that from the great sensation of heat felt in the part, that heat *muſt* increase his sufferings.*

* A few years since I had a very considerable inflammation in my right eye and eye lid, from what would commonly be called a pouk or stian, in the superior palpebra, but much larger than is generally seen. The eye-lid was so much swelled that I could not open my eye, and the burning heat in the part was extremely distreſsing. The application of cold water was attended with a grateful coolneſs, but no sooner was it discontinued, than the heat was more intense than before, giving me a sensation similar to the glow which is experienced in the hands and face, in coming from frosty air into a warm room. If I kept the part moist for only a moment or two, with the cold water, it very much resembled the pleasing coolneſs from a few motions of a fan towards the face, when heated with exercise; which was followed also with a similar sensation of heat. I then made

Some may wonder that, long ere this, simple warm water has not been recommended and liberally used in disorders of the eyes, since its application is so beneficial; but they should recollect, that, till lately, the laws of organic life were little attended to in dictating any particular mode of treatment for the cure of disease: different hypotheses, taken principally from the theories or facts in chemistry or mechanics, were afsumed and acted upon, which had their origin solely in the ingenuity of their respective authors, and with which nature, not being consulted, had nothing to do. Thus arose a multiplicity

trial of hot water, and though the burning heat was, during its application, much increased, I had the *personal* satisfaction to find it was afterwards much abated. The hot water was repeated about every hour, or as often as the heat became more troublesome, with uniform relief. It may here not be improper to remark, as it will tend to confirm the propriety of my next mode of cure, that when I mixed as much camphorated spirits of wine with *cold* water, as to give me pain, or increase, during its application, the heat of the part, it was succeeded by an alleviation of the burning pain, the same as after the use of hot water.

of medicines to counteract or remove a variety of imaginary causes, and the more we consult authors on the cure of the diseases of the eyes, unleſs of a very recent date, the more we shall be bewildered by the incongruity of their prescriptions. One would suppose they acted as if they thought the more ingredients were made use of in their applications, the greater would be their chance of succeſs; it was therefore not surprising that water and still more *hot* water should be overlooked.

It is true a Mr. Duddell, who published in 1729,* almost uniformly recommended in inflammations of the eye, scarification, which he performed by means of a brush made of the beards of barley and an almost inceſsant application of *warm water*. He no doubt experienced the good effects of warm water, but supposing an obstruction

* A Treatise of the Diseases of the Horny-Coat of the Eye and the various kinds of Cataracts. To which is prefixed, a method, entirely new, of Scarifying the Eyes, by Benedict Duddell, Surgeon and Oculist.

of the veſsels to be the cause of inflammation, he attributes it to its power of "opening the pores and helping the perspiration of the parts." He is the only author, I know of, who recommends a *liberal* use of warm water, which, though he does nearly uniformly, he lays not much streſs upon but attributes most of his succeſs to the previous scarification; though when it is recollected, that his instrument for dividing the veſsels, was a brush made of *barley beards*, few, I suppose, will now be inclined to agree with him.

As it is applicable to my present purpose and may afford some gratification, I will make a few extracts from his publication, by which my reader will be enabled to judge of Mr. Duddell's practice.

Having given directions for preparing his scarificator, and described his manner of using it, he says, (p. 23), "when you have done scarifying, you take off the blood that sticks to the eye lids, and then wash the eye with a rag dipt in warm

water; every time you wash you must begin next to the nose, and wash all along the lids to the temples, you must wipe but once before you dip again; then wash again according as you see occasion, sometimes with *hardly any intermiſsion.* I have *taken off* a *violent opthalmy* by *washing from morning to night.*

By the cases which he gives, he does not appear an advocate for bleeding or blistering, yet he says, (p. 25), "you ought to put every thing in motion, by bleeding, blistering, scarifying, and fomenting, and to bleed in the artery of the temple, which is to be repeated as there is occasion. The washing with *warm water* must be repeated *almost without intermiſsion*, for that opens the pores and helps perspiration of the parts."

He then proceeds to give the following cases, (p. 26): "Mr. Dodd, about 36 years of age, could not see to distinguish any thing, and had been in this condition for fifteen days; his eye looked very fright-

ful, he had a pain in his head and the temple next the eye. He had been blooded before I went to him, and had used all the means that were thought proper for that distemper. I began with scarifying on the inside of the eye lids and the conjunctiva. I made him wash his eye with warm water, and it began to discharge considerably from the part I had broken; he applied the pulp of a roasted apple at night, the next day he *kept washing his eye* with a *warm* decoction of hyſsop. The third day I scarified the conjunctiva and inside of the lids. The day after the second scarification, the œdema was almost gone from the conjunctiva. The sight began to clear by the going off of the opacity; the sixth day I scarified again; he *continued washing* and applied a roasted apple, in which was mixed two grains of camphor. On the eighth day he saw pretty well, the inflammation was almost gone off. I scarified no more than three times, but I ordered him to *continue washing* his eye and to apply a

roasted apple at night, and at the end of fifteen days he saw perfectly well."

The next case is of a woman who had an opacity over the whole cornea of one eye, which was occasioned by lime being thrown into it, which also caused an adhesion of the lids: having "separated the "parts that were joined with a lancet, and "scarified the inside of the lids, and the "lower part of the conjunctiva, I ordered "her to *wash the eye* with *warm water all* "*the day long*, and to apply the pulp of a "roasted apple at night. The next day, "she *continued washing all day*." On the third and sixth day he scarified again, continuing the use of warm water, when the eye was considerably clearer, and she could distinguish objects. The cure was completed, he adds, in another week, by the application of oil off eggs to the opaque part.

"In the year 1720, (says Duddell, p. 32,) an old man, 73 years of age, came to me with an absceſs in the outward blades of the

horny-coat of his left eye, of the bigneſs of a little pepper corn, opposite to the pupil, with an albugo (an opacity of the cornea) all over the exterior part of that coat as far as the conjunctiva; he could not distinguish any thing. I did not bleed him, for he seemed very weak, but applied a bliſtering plaster to his temple; then I scarified him on the conjunctiva: no blood came, but a little tinged serum. I made him foment his eye with a rag dipt in *warm water*, with *hardly any intermiſsion.* By means of the warm water, the blood veſsels began to fill at the end of six hours; then I scarified and evacuated about a spoonful of blood, by breaking some of the capillaries. I made him continue *washing his eye inceſsantly.* By these means, the man, at the end of twelve hours, could discern my fingers when I went to examine his eye: at the end of forty-eight hours he could discern any thing. I continued scarifying him every other day, and he *kept washing his eye*, and applying the pulp of a roasted

apple at night; and thus, at ten days end, his sight was perfectly recovered."

There are a few other cases, by the same author, of a similar import: the general routine of his practice seems to be—scarifying the eye—the continued application of warm water—and the pulp of an apple applied to the eye at night.

Scarifying the eye, even with a sharp instrument, as a *general practice*, I condemn as being for the most part prejudicial; I am, therefore, not inclined to suppose much benefit could be derived from Mr. Duddell's brush of *barley beards*, but rather to the warm water.

In Opthalmy, the inflammation is liable to frequent intermiſsions and exacerbations, or rather, at times, probably three or four, or even six times in the day, the pain of the eye is increased, with a strong pulsation of the temporal artery, and a copious discharge of tears. This increase of the action of the veſsels often appears to be instan-

taneous: the eye feels nearly easy and comfortable, when, suddenly, some sharp body, as it were, pierces the eye, the lids are firmly closed, and a pain shoots into the forehead and temples. In lefs than a minute the pain abates, the lids are opened, tears run down the cheeks, and the eye feels easier; but by this accefsion every symptom is aggravated, and the eye is more inflamed than before.

In this respect, a remarkable similarity is observable between Opthalmy and general Fever. At times, the pain of the eye is continual, with slight remifsions, during the day, resembling the continued Fever; at others, the pain of the eye and head, and the throbbing in the temples, comes on but once or twice a day, and after continuing a certain time subsides, and the eye is left easy, forming the Intermittent.

In some few cases, previous to the accefsion of the pain, the torpor is so great that the head feels cold, according to the *cold paroxysm*. This, however, is not often

observed ; but I recollect several instances in which the pain came on twice and sometimes thrice a day, and the teguments of the head felt cold for several minutes previous to any change in the eye, and which was frequently prevented by dropping into it two drops of a weak tincture of opium. Here, too, is seen another resemblance in the mode of cure; for the paroxysm of an Intermittent has been often prevented by a large dose of wine, of aromatics, or of opium ; and in the Opthalmy, as just mentioned, the pain was warded off by two drops of laudanum. The same effects would, probably, have been produced by alcohol or caloric.

Though the similarity in the mode of cure holds good in Intermittent Fever and Opthalmy, it is lost in the continued Fever, attended with arterial strength ; for were we, in that, to attempt the exhaustion of the irritable principle, by increasing the activity of the system, the destruction of the whole machine would be the conse-

quence, by the violence of the exertion; so that, instead of exhausting it faster than it is formed, we ought to endeavour to prevent its quick formation, by diminishing the powers of life, as by bleeding, cathartics, &c. In the Opthalmy, the increased activity of the veſsels being confined to a *small part* of the body, the exhaustion of the irritable principle in *that part* quicker than it is supplied, may be attempted with safety, and pretty generally with succeſs.

In making use of caloric, by means of warm water, to exhaust the irritable principle on the acceſsion of pain, it must be applied with a wine-glaſs, as hot as it can be borne, for three or four minutes; when drying the eye, if, in ten minutes, it is not much easier, the hot water muſt again be made use of, and repeated as often as the pain returns.

When the inflammation is not confined to the conjunctiva, but extends to the eyelids and the neighbouring parts, it will not be proper to use the warm water with a

glaſs, as that would irritate the inflamed part too much; but cloths dipt in hot water should be applied for fifteen or twenty minutes, every two or three hours, till the pain abates, and the swelling of the lids subside.*

B. Alcohol diluted with water, either with or without a ſmall quantity of cam-

* Warm water, somewhat disguised, has, for a long time, been used in inflammations of the eyes, under the form of a fomentation in the decoction of poppies, and frequently with relief; but which I attribute more to the caloric in the liquid than to any virtue, deserving attention, that is derived from the poppies. Practitioners also occasionally make use of a similar application, or a decoction of chamomile or wormwood, or other similar herbs, as a fomentation, in sprains and bruises, and in inflammation and swelling of the penis and testes. Heat, too, in different ways, is frequently applied in inflammatory and spasmodic affections of the alimentary canal. The pain of the face and gums, proceeding from cold, I have often removed by the external application of water, as hot as could be borne, applied by means of a cloth to the cheek and neck.

In that eruption of small blisters in the hands, and, at times, in other parts of the body, which is commonly called scorbutic, I have found the moſt *deciſive* and *uniform ſucceſs*, from immerging the part affected in *hot water*, two or three times a day, or in some cases every hour, according as the itching and pain was troubleſome.

phor, has been made use of, as an application in inflammation of the eyes for more than twenty years, by my worthy and

This eruption generally happens in warm weather, the itching and pain of which, with the ſwelling of the part affected, is often a source of great diſtreſs, and is rather aggravated than relieved by the ointments and washes generally had recourse to.

After having kept them in water, *warmer* than is *agreeable*, for three or four minutes, the itching vanishes and the swelling subsides.

A friend of mine, a medical gentleman, a few years since, had the complaint, just mentioned, in his hands to a violent degree; they broke out in small blisters, which, on being punctured or broken, discharged a small quantity of serum, and as the heat and itching in his hands were intolerable, and from the nature of his profeſsion, he knew he had been handling a number of persons, in different situations in life, he concluded he had taken the Itch. Impreſsed with this idea, he swallowed large quantities of sulphur, and applied a sulphur ointment freely to the parts. To allay the burning heat, every hour and sometimes oftener, he put his hands into the coldest water he could procure. At the end of nine days, his complaint, instead of being better, was considerably worse. The sulphur ointment was laid aside and warm immersion was made trial of, instead of cold, and was attended with immediate and permanent relief. The hot water was used as often as the itching returned, and in a few days he was cured.

respected relation, the late Mr. Thomas Moore, of Handsworth, near Birmingham, as well as by myself, for more than ten years, and with very great succefs.

I apply it of such a strength, sometimes with the addition of a little mucilage, as will produce considerable pain, yet not so

I know not how to attribute the immediate and invariable benefit received from the hot water, than by supposing the itching, in the first place, is removed by a new or a stronger sensation being excited by the heat; and secondly, that this same heat exhausts the irritable principle in the part, which, for a time, prevents an increased action. Some may suppose, that the relaxing effect, that hot water has upon the cuticle may account for its salutary operations, but that the pain and itching is not owing to that cause, appears from the small blisters that arise in the palm of the hands and soles of the feet, where the cuticle is very thick, being seldom attended with any inconvenience.

Warm water seems not only to act as a stimulant, exhausting the irritable principle, but it also increases the action of the absorbents, on which account it may be useful in inflammatory affections. It is seen that washerwomen, who keep the hands for some time in hot water, have them much whiter than they were previous to the immersion; and the Rufsian and Turkish ladies are very fond of the *warm* bath, which they frequently make use of, that their skins may be more *fair* and *delicate*.

violent as one not very timid will endure without much reluctance. It is impoſsible to mention any particular quantity of alcohol to a certain quantity of water, as that will depend upon the irritability of the eye. I generally put from one to four drachms of rectified spirits of wine into four ounces of water. If I use camphor with the spirit, it is in the proportion of half an ounce to two pounds, and then from one drachm to three of the camphorated spirit will be sufficient. Some will bear it stronger, especially if the system has little sensibility: if preparations of lead have recently been used to the eye, in any quantity, I have often found a greater proportion of alcohol could be used.

In general, I find two drachms of the rectified spirit of wine, or a drachm and a half of the camphorated spirit, answer very well; but I must observe, it is of consequence towards succeſs, to have the mixture of a proper strength; for if the pain it causes is very severe, it will stimulate the

eye too much, and the patient will not allow of its application long enough to bring on that peculiar action of the veſsels that is wished for, when the inflammation will be increased, instead of abated, as will shortly appear to be the case, if tinctura opii is applied at the commencement of a violent Opthalmy. If, on the other hand, it should be too weak, its effects will be slight and transitory, little ease will be experienced after using it, and the practitioner will be disappointed in the expected ceſsation of pain, and the alleviation of the symptoms.

When the strength of the application is determined on, which, as I said before, should be as strong as could be conveniently borne, the patient should be laid in an horizontal position, at least the head should be so placed, that when the liquid is dropt in at the inner angle, it may not run down the cheek, but gradually paſs between the lids over the globe. The conjunctiva by that means will be suffused,

and the lotion will trickle down the temple, where it may be absorbed by a napkin.

Ten or twelve drops being placed in the natural cavity or bason, which is formed at the inner angle, when the head is placed horizontally; will, by being higher than some parts of the eye, on the lids being separated, gradually flow between them. The motion of the eye will spread it all over the globe, and, from its gravity, it will as naturally flow out on the other side, upon the temple.

During the application, the eye should be occasionally opened by the patient's own exertions, as the operator should by no means be officious in separating the lids with his fingers; but when there is no necefsity for dropping the lotion at the corner of the eye, he may bathe the lids with the moist rag, particularly when they are inflamed.

This mode of using the lotion should be continued, always taking care that there

are eight or ten drops at the great angle, ready to flow into the eye, on any motion of the lids. In that way the eye may be kept constantly supplied, until the pain is very much diminished, or has altogether subsided; or rather, till the sharp smarting pain which was felt on the first application of the mixture, is changed to a sensation of warmth, which is not very unpleasant. This will, in general, happen in six or eight minutes, particularly after it has been applied several times, though occasionally, on the first application, it will require a longer time. When there is too small a proportion of alcohol, the eye does not smart, but feels warm from the beginning of the application of the lotion.

The moisture about the eye is now to be absorbed, with a piece of fine linen, and the patient suffered to arise from his recumbent position. For a few minutes the eye generally waters pretty freely, when, in a short time it becomes cool and easy; the lids feel as if a weight had been taken from

them and they are moved with greater ease.*

When the lotion is properly applied, its succefs is often very striking; for after it has been used three or four times, the action of the vefsels frequently seem to be totally changed, and the progrefs towards recovery appears astonishingly rapid.

I must, however, again repeat, that the ease, consequent upon its proper application, will not take place unlefs the preceding rules are strictly adhered to. It may also not be unnecefsary to give a few additional cautions, which should be attended to in applying the lotion.

I have frequently observed an anxiousnefs in some people to have the lids fully separated, which they do with the fingers,

* Weak brandy and water has for some time been used as a collyrium, and I have frequently heard it extolled as doing much good. It is very probable when stimulants merely are required, as in inflammations of long continuance, or where there is little pain, it may afford relief, but in the common way of applying it, in an incipient and active Opthalmy, I fear it would be of little service.

that, as they think, the application may be more completely applied to the eye. I must, however, beg leave strongly to insist on the impropriety of the least violence by preſsure being done to the eye, or the lids, by the bearing of the fingers; which may cause such an increased irritation as to prevent any salutary effects that might otherwise have been produced.

If it should be neceſsary for the person who dreſses the eye, to separate the lids to admit the lotion, which, from the swelling of the lids, or from timidity, the patient is prevented from doing, or to remove any small particles or threads of matter that may be floating in the eye, the best way will be to place one of the fingers against the orbital proceſs of the frontal bone, immediately under the eye brow, and on drawing the skin and eye brow upwards, the lid in most cases will be sufficiently elevated; besides, it militates, in some degree, against the intention of the application to drop the *cold* lotion immediately on the

inflamed veſsels of the eye. By dropping it at the corner, as before directed, the chillneſs is taken off, and that unpleasant sensation prevented, which a sudden application of it to the eye occasions. The last objection, it may be supposed, might be obviated by warming the lotion, but though there can be no objection to warming it to 90 or 100 degrees, when made hot it does not answer so well, perhaps from the irregularity of its action.

We are all aware how much inflammation, in any part, is increased by friction, preſsure, or any kind of violence, and yet, by the usual method of dreſsing an inflamed eye, which is a part peculiarly susceptible of irritation, the above fact is often little attended to.*

* As a proof how much the inflammation is increased by preſsure or the least violence, I may mention the well known effect of *scratching*, when a part has a *tendency to inflammation*. If the nails are rubbed over the part two or three times, it *immediately* becomes red and inflamed, and generally takes some hours, at other times a day, before it is restored to its

I must desire also, that care be taken, that the eye is constantly supplied with a sufficiency of the mixture, for if a drop or two is only occasionally admitted, it will produce as much pain and will excite the fibres into greater actions, without subsequently alleviating the pain.

The application of alcohol, diluted with water, in the manner just recommended, is, I believe, entirely new, and after a great deal of experience of its utility, I have no hesitation in recommending it, as the best general application in Opthalmy; at the same time, it must be observed, that there are, no doubt, many cases in which other applications are preferable, and which I shall shortly endeavour to point out, but as it is injurious in no cases, and *highly beneficial in most*, it will be found well worthy of particular attention.

former appearance. If violence is done to the eye by dressing it, and that repeated twice or thrice a day, in vain may we expect amendment from our remedies.

I must confeſs, I have been sometimes disappointed in the ratio of succeſs I expected; but I can truly aſsert, I have never *myself applied it* without affording ease, at least, for some time.

I feel anxious to be clearly understood on the mode of its application, as I trust it only requires to have a fair trial, to prove its superiority over the washes and lotions generally recommended, and I must again remind my reader, that the lotion must give *pain*; that the eye should be *constantly filled with it* till that pain subsides; and, that the eye should be treated with all *gentleneſs*.

The succeſs, in the use of alcohol, seems, in a great degree, to depend upon its being applied till it ceases to stimulate the eye or to give pain, from the irritable principle being in part exhausted. Impreſsed with this idea, I have, in obstinate and violent cases, very much increased its power by dropping it into the eye, at first of the usual strength, and in a minute, that is when the eye has been a little accustomed

to its stimulus, added a few more drops of alcohol to the lotion I was immediately using. I have still added more spirit every minute or two, as the eye could bear it, till I have sometimes added nearly a fourth part of alcohol. This bathing I have continued for fifteen or twenty minutes.

A mode of applying alcohol, very similar in its intention to the one I have recommended in Opthalmy, has long been in use by the common people, in slight wounds and burns: they keep the injured part moist with brandy or rum, or some kind of spirit, till the pain it first causes is no longer violent, which, it is generally said, prevents soreneſs in one instance, and removes the pain in the other.*

* The stimulating method just recommended, in Opthalmy may appear inconsistent on first view, since there is already too much action; but it is daily put in practice in other complaints: as in the application of *brandy* and *vinegar* to a sprain or broken bone; of *hartshorn*, or *hartshorn* and *oil* externally to a sore throat, and internally *brandy* and *water* or *port wine*, or other kind of gargles which contain a good deal of *spirit*.

The Second Mode of exhausting the irritable principle in the cure of Opthalmy, is by the application of a *strong* stimulus to the eye. The best medicine that presents itself, for that purpose, is *Tinctura Opii*, or Thebaic Tincture, first brought into notice by Mefsrs. Wathen & Ware, and set forth in a well written tract, entitled, "Remarks on the Opthalmy, &c. by James Ware." There are, I have reason to believe, other medicines which would answer as well, but as *opium* † does almost all we can expect, from a medicine of that kind, and is in every

I have often applied camphorated spirit, in the proportion of half an ounce of camphor to two pounds of spirit, in *gonorrhœa virulenta*, as strong as could be conveniently borne; and I have generally found the disease has been removed more speedily than in using the injections which are commonly had recourse to. In this mode of treatment, I conceive there is no danger of producing a *stricture*, which some practitioners are fearful of, and which makes them timid in the use of injections.

† In another part of this Treatise, I shall make some remarks upon a *Tincture* of *Tobacco*, as a cure for Opthalmy, which will be better introduced as we proceed.

one's hands, I shall confine my observations more particularly to that substance.

Its manner of acting in the cure of Opthalmy has not hitherto been properly explained or understood; and indeed Mr. Ware acknowledges, he found it very difficult to satisfy himself on that head. With proper deference, the following remarks are submitted to the intelligent reader, wherein, it is hoped, if no advancement is made in explaining the *rationale* of the use of opium and other stimulants, that, at least, the *application* of them to the cure, will be more clearly set forth, and some directions given, which will enable the Medical Practitioner, to appropriate the *strength* and the *quantity* of the remedy, to existing circumstances.

When the eye is attacked with inflammation, the vessels are excited into *great* and *unnatural exertions* producing pain, occasioned either by a *new* or *increased* stimulus, or by an *accumulation* of the irritable principle. Provided no other diseased actions

take place, except the more frequent and stronger contractions of the veſsels, the irritable principle in the fibres becomes *diminiſhed*, and the pain remits. In that interval, the irritable principle is *renewed*, the fibres are again *ſtimulated* into exertion, the stimulus of pain is repeated, and the fibres again exhausted.* As the force and vigour of the contractions is succeeded by a *proportionate* degree of torpor or quieſcence, the veſsels become enlarged.

When the quantity of the irritable principle, with which the part is supplied, and the stimulus excited by the increased diameter of the veſsels is *equalized*, they are no longer violently irritated, and of course no pain is produced, unleſs the elongated fibres occaſionally make some slight exertions to recover their usual size: this has been called the atonic or paſsive inflammation.

At the commencement, then, of an Opthalmy, the fibres are easily thrown into

* Vid. Darwin's Zoonomia, vol. i. sect. xii. p. 79.

violent and increased action, from the quantity of the irritable principle in them, and their previous strength. As the inflammation continues, unlefs it has been occasionally increased by some fresh cause, the irritable fibre becomes weaker, and the pain lefs, till in the end, if health is not restored, it goes into the Atonic Opthalmy.

It follows, from what has been just said, that if tinctura opii of a given strength, is dropt into the *highly irritable eye*, in an incipient inflammation, its stimulus will be so great, as immediately to produce such violent exertions of the fibres, which probably proceed so far as to be convulsive or spasmodic, that the inflammation and every unpleasant symptom is increased. In the same manner, if an over dose of opium is taken into the stomach, *vomiting* is excited, without any sedative effect being produced; and again, though in a state of health, the stomach might bear *two*, or even *three* grains of opium, without discharging it, yet if the same stomach were *inflamed*,

and its sensibility of course much increased, one quarter of a grain might produce violent vomiting.

On the other hand, when the stimulus from the enlarged veſsels, and the irritation is become more moderate, the same quantity of opium will have a very different effect upon the eye, than it would have had, at the commencement of the inflammation; so, if the irritable principle in the stomach has been much diminished by large potations of spirituous liquors, and *six drachms*, or even *an ounce* of the tinct. opii *immediately* swallowed, the stomach has been known to retain it.

To prove that tinct. opii, in the very early or first stage of Opthalmy is generally injurious, for it does not always prove so in those of little sensibility, I must be allowed to examine the causes of the *succeſsful* application of it by Mr. Ware,* the only person who has written pointedly on its use in Opthalmy.

* In quoting from Mr. W. I allude to the 2d edition.

Case 1st, is of a lady 26 years of age, who, after a miscarriage, caught a severe cold, which brought on a violent inflammation in the left eye. At the end of *six* weeks from the attack, the inflammation still continuing, the tinctura opii was first applied, which was followed by great ease.

Case 2.—The tincture was applied with great advantage, *to* the eye of a young lady, who had an opacity on the cornea, with great pain, though little apparent inflammation, after having had the small pox.

Case 3.—The third case was of a gentleman 35 years of age, who had a severe inflammation in the right eye. On the *third*, *fourth*, and *fifth* day from the attack, the tincture was applied, which gave him extreme pain without any subsequent ease. About a *week* afterwards it was again made trial of and *then* afforded relief and a diminution of the inflammation.

Case the 4th, was a fireman, who, by continuing in his wet cloathes, when at-

tending a fire, caught a violent cold which brought on a fever, accompanied by an inflammation in his eyes. Mr. Ware did not see him till a fortnight after the first attack, when, with the application of leeches to the temples, a large blister to the head, and a strong purge to be taken the next day, he ordered the tinct. opii to be dropt into the eye. We are not informed that any remarkable or immediate ease followed, yet we are authorized to conclude, its operation was *rather favorable* than otherwise, and that the pain soon subsided, as he was ordered to repeat it. But in a *few days* he was much more free from pain, and *then* we are told the application of the tincture was *always followed* with considerable relief. In the course of a month, "depending chiefly on the "tinctura opii," though it appears to me, other powerful means were made use of, the patient was nearly cured.

Case 5.—A gentleman, in this case, is mentioned, who had contracted a gonor-

rhœa. At the end of two months, when there was only a gleety discharge from the urethra, a small inflammation was discovered in the inner angle of the right eye, and in a few days more, the whole of the conjuctiva was much swelled and inflamed. Between four or five weeks after the first appearance of inflammation in the right eye, the left became inflamed in the same manner as the other. On the succeeding day, Mr. W. attended by Mr. Wathen, saw the gentleman. The cornea of the right eye was opaque and ruptured, with a small protrusion of the iris. The tunica conjunctiva of the left eye, though not much inflamed, was swelled, and covered with matter. The tinct. opii was applied, but as no decided good effects proceeded from its use, and as *repeated bleedings* both from the conjunctiva and by means of leeches and *cupping* with the aid of *blisters*, *purges* and the *aqua camphorata*, as an eye water were prescribed, little can be said of the efficacy of the *tincture*. In about a

month the patient was tolerably recovered, as far as the nature of the injury done to the eye would admit.

Case 6.—A boy had some gravel thrown into his eye which brought on an inflammation, which was so violent, as to produce a rupture of the cornea transparens, with a projection of the iris, as in the fifth case, a circumstance by no means unusual. At the end of *six weeks* Mr. Wathen accompanied by Mr. Ware first saw the patient. Three leeches being first ordered to be applied to the temple, which was succeeded by a blister: the *tincture* was dropped into the eye for three days successively without any abatement of the inflammation. It was now thought probable that the irritation was kept up by the projecting part of the iris: it was touched with lunar caustic, and on the tincture being repeated, it seemed to be followed with advantage. In a fortnight the inflammation was removed.

Case 7 mentions the good effect that arose from the internal use of corrosive

sublimate in an obstinate and violent inflammation of the eye, accompanied with great pain in the head, but not applying to our present subject, I need not describe it.

I shall, however, mention *one observation* by Mr. W. which is much to my present purpose, and is an *additional proof* of what I have before said on the impropriety of applying the tincture in the *first* stage of Opthalmy; "the inflammation at this time rose so high, and had made the eye so *extremely irritable*, which was manifest from the fiery redneſs diffused over it, as to *forbid the present use* of the thebaic tincture externally."

After making the above observation, it is to me surprising, Mr. W. did not insist on the *impropriety* of using the tinct. opii in the first stage of Opthalmy; but the whole of his remarks are, that it is difficult, à priori, to know whether the application of the tincture will be beneficial or otherwise; but recommends, if the first

application is *unsuccessful* to wait a few days and then try it again.*

The cases which have been just related, it will be recollected, are not pickt ones, but are *all* that Mr. W. has given, in my

* Since writing the above, I have found the following observations made by Mr. Ware in "Additional Remarks on the Opthalmy:"—"The inflammation is often visibly abated by only one application of this tincture (tinct. opii) and many bad cases have been completely cured by it in less than a fortnight, after every kind of remedy had been used for *weeks*, and sometimes *months*, without any success. But this speedy good effect is not to be expected in all cases indiscriminately. In some the amendment is more slow and gradual, requiring the tincture to be made use of for a much longer time, and a few instances have occurred in which *no relief at all* was obtained from its *first* application. In cases of the latter kind, in which the complaint is *generally recent*, the eyes appear shining and glossy, and feel exquisite pain from the rays of light. However, notwithstanding these symptoms, the application is *sometimes* found to succeed, and whether it will or not, can only be determined by making the trial, which is attended with no other inconvenience than the momentary pain it gives. When it is found to produce no good effect, the use of it must be suspended, until evacuations and other proper means have diminished the *excessive irritation*, after which it may again be applied, and bids equally fair for success as in those instances in which it never disagreed."

edition, in which any *stress* was laid on the application of the tincture; by which it appears that when it was used in the early stage of the complaint, it aggravated every symptom, and that it was only in those that had been of *some duration*, that its effect was salutary.

It must, however, be observed, that it is not to be known when the application of the tincture is likely to be beneficial by the length of time since the *first* attack, as it is liable to frequent accessions, after the commencement of the inflammation, and we must be governed more by the *appearance* of the *conjunctiva*, than by the pain or the apparent irritability of the eye. If the redness of the conjunctiva is *universal*, and the course of many of the inflamed vessels not to be *distinctly traced*, from the intense redness of the eye, its application *seldom* does good.*

* In such cases the *diluted alcohol* is peculiarly applicable, and its use is often attended with an immediate diminution of the pain, and, in a few hours, a visible amendment.

In some cases where, from the great *pain* in the eye, and the *intolerance* of light, it might be supposed the tincture would be injurious, I have found it of the most *decided* advantage. This does not, however, militate against my general aſsertion; for the pain may be *most acute*, and exposure to the least light *tormenting*, and the conjunctiva, which in fact I have repeatedly observed, may not be *very much* inflamed. The pain in those cases proceeds from the *interior* parts of the eye being inflamed, with the increased sensibility of the retina to the rays of light; so that the tincture, being dropt into the eye, is not immediately applied to the part *most affected*, at least is not applied to a part *highly* inflamed.

Since I have supposed, that the want of succeſs in the application of the tinct. opii in the *early* stage of Opthalmy, has been owing on one hand to the *great quantity* of the irritable principle with the *tone* of the fibre, and on the other to the strength of the application, I determined to try if

the remedy would not succeed better, when made weaker. I made trial of an *aqueous* solution, and also of the *tincture*, *diluted* with aqua pura, both of such a strength that the eye could easily bear, and at other times to produce an acute pain; the use of *none of which* were followed with any diminution of the pain, but, on the contrary, the eye, for a considerable time, was more uneasy, felt hot, as if *dirt* or *sharp* bodies were piercing it.

After using the aqueous solutions, this pricking sensation (which was probably the cause of their not succeeding) might be owing to the *minute portions* of the opium remaining suspended in the lotion, or to some *resinous particles*, not dissolved, which give it a muddy appearance, and which might adhere to the surface of the conjunctiva, and cause the unpleasant irritation mentioned.

In the diluted tincture, the cause of its not succeeding is more evident; for, on adding water to the tincture, a visible de-

composition immediately takes place, the additional quantity of water not being able to keep the resinous part of the opium in solution, it is precipitated in *small flakes*: these adhering to the eye, will, no doubt, produce considerable irritation, which will feel as if something were pricking it. The continued pain, subsequent to its application, will prevent any advantage which might otherwise arise from it. The same happens in some degree in using *all lotions*, which are not *transparent*.

Being disappointed in these experiments, I was induced to make trial of tinctures of opium, of different proportions of opium and spirit, and after many experiments, I at length gave the preference to the following:

Tinctura opii mitior.

℞ Extracti opii, drachmas quinque.
Spiriti vini rectificati, uncias quinque.
Aquæ distillatæ uncias decem.
Digere per dies sex, & cola.*

* The tinctura opii, which Mr. Ware recommends, is the *old tincture* of the London Dispensary, and there termed tinctura thebaica, and is thus prepared:

It will be observed, that this tincture, which I generally prefer, contains only *half* the quantity of opium of the present tincture of the college, and only *one-third* of the former tinctura thebaica, with not so much *spirit* as in one of them, and without the *warm aromatics* of the other. A tincture of that strength must neceſsarily give leſs pain in its application, and affect the irritable fibre in a much leſs degree, and yet I have observed it *equally beneficial*, in most cases, and as a general remedy, *more often succeſsful*.

From being made weaker, it may be employed with advantage in almoſt *every*

℞ Opii colati, pondere, uncias duas.
Cinnamomi,
Caryophillorum aromaticorum, singulorum, pondere, drachmam unam.
Vini albi, mensurâ, libram unam.

Macera per hebdomadam sine calore; deinde per chartam cola & adde spiritûs vinosi tenuioris viceſsimam circiter partem ut tutior sit à fermentatione.

It is, perhaps, unneceſsary to observe, that the present formula of the college of tinct. opii, is ℥ x. of opium to lb. i. of proof spirit, instead of *two ounces* of opium, as above, and omitting the aromatics.

stage of inflammation of the eyes, even at the very *commencement* of the attack; and in a more advanced stage, it generally proves strong enough to afford the same relief as the more powerful tinctura thebaica.

There is an objection of some weight to the tinc. theb. which is, that the patient must sometimes, for a week or two, suffer all the agony and distreſs of a violent disease, to say nothing of the pain arising from the curati ve proceſs of *bleeding*, *blisters*, *cathartics*, *lotions*, &c. to bring them to a *proper state* for the application of that remedy, in which the practitioner has most hopes of succeſs; whereas in the milder tincture, it may be applied in the *earliest stages* of the complaint.

In those cases, however, of *extreme irritability*, where the leaſt doubt can arise about the propriety of applying a tincture of opium, it will certainly be the most eligible plan to make use of the former method, which has just been described, of dropping into the eye, a lotion containing

as much *alcohol* as the eye can bear, which will remove every objection that the tincture is liable to.

I always first make trial of the *milder tincture*, and have seldom occasion to use any other; there are, however, two cases in which the tinct. thebaic, is much preferable, as producing a more speedy cure than the more mild tincture. One is, when there is not much inflammation on the conjunctiva, but *red veſsels* visible in the cornea: the other, where there is a protrusion of the iris through the cornea (the myocephalus of authors,) without great pain or much inflammation.

In using the tincture, when one eye only is affected, two drops should be dropt at the *inner angle*, in the cavity formed by the junction of the lids, when the lower lid being gently depreſsed, the tincture will glide over the surface of the eye. If both eyes are inflamed, it will save the patient some pain to charge each eye with the two drops, before any is allowed to go in,

when *both eyes* being opened at the *same instant*, either by the patient's own exertion, or by depreſsing the lower lid, the tincture will paſs into both eyes, at the same time; by which, although the actual *quantum* of pain may not be diminished, the duration of it will, and the pain that arises from applying the tincture to both, will make very little difference to the feelings of the patient: when the pain is severe, we are incapable of judging, even of considerable variations in the degree of it. In like manner, after making use of the *milder tincture*, and applying the other, which is *double* the strength, the patient has often scarcely been able to discover any alteration, though, without doubt, to the *irritable fibre*, the effect will be widely different.

Before dropping the tincture, the eye should be made as dry as poſsible, and in separating the lids every kind of violence should be carefully avoided. The method of *forcibly* and *rudely* separating the lids, and dropping the tincture from the height

of several inches, upon the globe of the eye, ought never to be put in practice, as it adds very much to the pain of applying it, and the irritation produced by the forcible separation of the lids, will frequently aggravate the complaint.

I must be permitted also to observe, that the tinctura opii of the shops should never be *diluted* for extemporaneous prescription, as some separation of the opium will take place, and the mixture become *turbid*; the insoluble particles of which will adhere to the surface of the eye, and cause a prickling pain, as if dirt were in it, which will prove injurious. When a tincture weaker than the tincture of the shops is wanted in haste, the tincture, after having been properly diluted, should be suffered to remain at rest for *twelve hours*, and the *clear* part filtered through paper.

The application of the tincture may be repeated two or three times a day, or as often as may be necessary, from the violence

of this pain; for although *twice*, or at most *three times* a day is generally sufficient, the violence of the pain sometimes renders it necessary, to drop the tincture into the eye almost every hour. In such cases the eye generally waters a good deal, and feels hot: on the application of the tincture the pain is much increased; but that very shortly subsides, and the eye becomes more comfortable, and perhaps continues so for an hour or two, when the pain again returns, at which time the tincture should be repeated.

When the tinctura opii agrees with the eye, however acute the pain may be on its first application, the smarting subsides or nearly so, in five or ten minutes. If the pain continues much longer, it is a proof it *does not agree* with the eye, and ought, at present, not to be repeated of that strength: indeed, the same remark may be made of *every other remedy applied to an inflamed* eye; for, if in eight or ten minutes the eye does not become as easy, if not

more free from pain, than it was before its application, I conceive it a *certain indication* of the inutility of the medicine, or an impropriety in the *mode* of using it.*

* On mentioning the above modes of treatment to a medical Friend, he informed me, he had had an unusual success in treating Hemorrhoids, by an application very similar.—He ordered the part affected to have rags wet with equal parts of rectified spirit of wine, and tincture of opium, applied to them three or four times a day. The relief obtained had been so remarkable, that many persons had sent, desiring they might have the same application that *cured* Mr. ——, &c.

ON THE

Application of a Tincture of Tobacco to remove Pain in the Inflammation of the Eye.

Before proceeding further in the mode of cure, and the treatment of the different diseases that follow the inflammation of the eye, I beg leave to call the attention of my reader to a medicine, the importance and value of which I have been in the daily habit of experiencing, for more than

ten years. It is true, it has no pretention to the power of curing the Opthalmy; but it is an application from which I have derived very important and gratifying assistance, in that branch of my profefsion.

The application I allude to, is a strong *Tincture of Tobacco*, which I prepare in the following manner:

℞ Foliarum Nicotianæ concisæ, libram unam.
Camphoris, drachmas quatuor.
Spiritûs vini rectificati.
Aquæ distillatæ, ana libras duas.

Camphoram, cum spiritu vini rectificato tritura, ut solvatur, dein adde nicotianam & aquam distellatam. Digere per dies octo et cola.

It is well known, that one of the most distrefsing symptoms attending an inflammation of the eye, is a pain of the temple and forehead, which is more or lefs continued; or attacks the patient, more or lefs frequent, according to the violence of the disease. When it comes on, a sudden pain is felt in the eye, or it feels as if it were swelled and is hotter than usual; but in

some cases it is dry and as if something were bound upon or preſsing it. A sensation next follows of some sharp body piercing the eye, and the lids are firmly closed. In a few moments the eye discharges freely and an acute pain, frequently with throbbing, is felt in the temple, and if the fingers are placed to each temple, the affected side appears more hot than the other. This pain frequently continues for several hours, and when the head has, for a short time, been somewhat easier, it again returns and the sufferings of the patient are the same as before.

In the common routine of practice, no method is taken, because *none is known*, to remove this pain, unleſs we consider bleeding with leeches, or the application of a blister to the pained part as such, which are often inefficient to the purpose; but if from half a drachm to two drachms, of the *Tincture* of *Tobacco*, is rubbed with the finger, on the part affected, it will generally be found that the pain will be

diminished, if not *removed*, in five or ten minutes.

In applying the tincture, I would advise, that it should be rubbed on with the end of one or two fingers, and not very lightly, but with a preſsure as great as can be borne without giving the least pain, at the time, or causing soreneſs afterwards. If rubbed on very *lightly*, or the part only kept moist with a rag, it has not the effect of removing the pain, as when rubbed on more *strongly* with the finger.

The tincture should be repeated three times a day, and as often as the pain returns. It will be better to repeat the tincture three times a day, although the pain in the head may not seem to require it, as the temple and forehead may be uncomfortable without any acute pain. Its application has removed this uneasineſs, and, I have frequently thought, prevented a return of the pain.

The pain is generally confined to the temple, but at times it is experienced all

over the side of the head that is affected, and more particularly in the back of it: wherever the pain may be, the tincture should be applied till it is removed.

In recommending a new medicine to the attention of the public, the publisher is generally too liberal in the praise of his favorite remedy, hence medical men, from the strong manner in which it comes recommended, soon find themselves disappointed in its boasted powers. They do not find in it *all* they have had reason to expect, they, therefore, often lay it aside, and those sanative powers which it really poſseſsed are overlooked. Aware of that truth, I decline saying all I think of its beneficial power, in removing the pain in the head and temples, attendant on Opthalmy, yet, I flatter myself, in the headach which has been just described, the practitioner will seldom find himself disappointed in the expected relief.

I mention its good effects in the headach *just described*, because it is not *every pain* in

the head, attendant on Opthalmy, that it will remove, though as it gives no pain in its application, it should certainly be tried *in all*. I have remarked that in the pain in the forehead, accompanied with a constant aching deep seated pain in the eye, it is often unsuccefsful, and also when the pain appears not to be confined to any one particular part, but is general over the whole head, and often attended with a good deal of fever, which probably is the cause of its failure.

Although a drachm or two of the tincture is in general sufficient to remove the pain, I have occasionally used from half an ounce to an ounce, in cases where the pain has been very violent and extended. In those instances, I have requested the patient to point out the part where he experiences the most pain; upon that, I apply the tincture, desiring him, as the pain abates, to mention the circumstance, that the tincture may still be rubbed upon the part where there is the greatest pain.

As a proof of the propriety of the above directions, and also of the power of the tinctura nicotianæ, I mention the following case. Mr. H. 23 years of age, dreadfully afflicted with scrophula, having a number of strumous swellings in his neck, some of which had broken, and the marks of them very visible; a bloated countenance and a thickneſs in his speech, from the palate being injured by the disease, applied to me, on account of a violent inflammation in his eyes. They were both much inflamed; a protrusion of the iris had taken place in one, and there was a large opaque spot in the cornea of the other, and he complained of a most violent pain, particularly in both his temples, though no part of the head was free. The pain was so violent and continued, that he had had no sleep for 48 hours previous to my seeing him. After bathing his eyes for about eight minutes with alcohol and water, I applied the *tincture*, where there was the *most pain*. The temple shortly

became *easier*, I then rubbed the other side, when the pain *there also soon yielded* to the application, but returned to the temple I had first rubbed, and from thence removed to the back of the head, where it was also followed, and after using rather more than an ounce of the tincture, my patient declared himself *free from the headach* which had tormented him so much, but said he felt rather dizzy, with a soreness over his head, and that he was inclined to sleep. From that time the eyes began to mend; the pain was removed as often as it returned by means of the tincture, and in about three weeks the inflammation was cured.*

It will here be naturally enquired, on what the salutary and pain-easing effects of the tinctura nicotianæ depends?

* I have repeatedly made trial of *tinct. opii* applied to the temple to remove the pain, and though in some *few instances* it answered the intention, it did not appear to have a power at all equal to the tinct. nicotianæ.

It is universally acknowledged, that the operation and power of many medicines, are by no means in the ratio of their *sensible qualities*. Thus the powerful effects of that active stimulant, *opium*, is not to be accounted for, either from the acrimony of its taste, or its stimulant effect upon the skin. Physicians, on that account, supposed opium poſseſsed of another power, viz. of *directly* diminishing or destroying the irritable fibre, not from *exhausting* it of its irritable principle but from preventing its action; which power they called sedative.

It is remarked, that in this claſs of medicines, (sedatives,) we are not authorized to judge of their effects upon the system, by any of their sensible qualities *previous to their exhibition*, as they seem to be indebted to their activity, to a something in their composition, which has not hitherto been satisfactorily explained. This power has, in some instances, a wonderful and almost instantaneous effect, in diminishing the action of the moving fibre, whether this

action is in its natural state, or increased by disease. These medicines not only render the irritable fibre insensible to those stimulating powers, which at the time of their application excited it into undue exertion, but make it also incapable of action, unless by a higher stimulus.

It is to this secret power, we are to attribute the activity of opium, belladonna, cicuta, hyoscyamus, lauro-cerasus, nicotiana, &c.

The powerful action of these medicines, when taken into the stomach, has been long and well known, but they were found so violent in their effects, as to be considered as poisons, and unfit for the purposes of medicine. Of late years, however, they have been frequently and more liberally employed. The wish to remove those diseases, the opprobria medicinæ, which would not yield to the usual mode of treatment, induced some of its intelligent and active practitioners to seek for remedies, in those articles of the Materia Medica, which, from

their great activity, were considered as inimical to life. Under the judicious and careful management of these men, their doses were ascertained, and their qualities more properly appreciated.

It is still of a more recent date, that the effects of these violent medicines were tried *externally*. About four years since Dr. Chiarenti, of Florence, mixed opium with gastric juice and pomatum, and by rubbing it upon the skin, the opium was absorbed, and had a similar effect, as if it had been taken by the mouth. By this means, he observes, opium may be administered in the most critical diseases of the stomach, and to infants of the most tender age. He applied opium, by means of friction, with succefs in mania and delirium, and as a *local remedy*, in the gout and odontalgia.*

In this country Mr. Ward, of Manchester, and afterwards Dr. Percival, of the same place, applied opium externally, and with advantage, in typhus, maniacal

* Vid. Duncan's Annals of Medicine, 1798.

delirium, chronic rheumatism, chronic dysury, and the stone in the bladder.*

Opium is not the only vegetable that exerts its influence on the system, by being applied to the surface of the body. It has been observed, that the application of arnica montana, to a part deprived of the skin or cuticle, as in a wound, was attended with great anxiety, and frequently with vomiting. The juice of belladonna being dropt into the eye, causes, almost immediately, an insensibility of the retina, and a dilatation of the iris. Indeed so great is the action of the belladonna, on the retina, that it has been said, that a leaf, laid on the eye lid, has in a short time impaired vision, by its influence on the optic nerve.

The external application of tobacco also, the immediate subject of our present inquiry, is well known to exert its influence on the system. Custom, having reconciled many people to the use of it, under different

* Medical and Physical Journal, Vol. 1 p. 441, and Vol. 2 p. 84.

forms, our daily experience must set this matter in a clear point of view. I do not here allude to the habit of chewing tobacco, by which some part must find its way into the stomach, with the saliva; for it is made use of in powder, to the moist Schneiderian membrane, in snuff taking, and the smoke of it also is applied to a surface well calculated for absorption, as in smoking, in both which ways its effects are very evident. Cullen says, (*Materia Medica*), "I have known a small quantity "of tobacco snuft up the nose, produce "*stupor*, giddineſs, and vomiting." The effects which the smoke produces in the custom of smoking are strikingly evident, even in a small quantity, causing *drowsineſs*, *stupor*, or vomiting. The effects of the infusion of tobacco, applied to a moist surface, indicate a powerful action on the system; for being injected into the intestinum rectum, it causes severe sickneſs and often vomiting. Cullen observes, that "he has known the infusion employed

with advantage, as a lotion to some obstinate ulcers, but the many instances of its being absorbed, and proving thereby a violent poison, dissuade from such a practice."

In the application of the tincture to the temple and head, I have only once observed any unpleasant symptom, which could be attributed to it; this, I conceive, is owing to there not being a sufficient quantity absorbed, to shew its deleterious effects. The instance alluded to was of a young lady, who being in violent pain from an inflammation of her eye, I directed her head to be rubbed with the tincture, when nearly six drachms were used, before the pain was removed. She afterwards complained of sickness, and in about half an hour, vomited. As she felt inclined to sleep, she went to bed, but arose again in two hours recovered.

Although the effects of absorption were very evident in the above instance, I cannot satisfy my mind that it is in that way it acts,

as the pain is frequently *very speedily* removed, with a small quantity. In what way, then, are we to account for its operation? Since the tincture of tobacco frequently removes the pain in the head very suddenly, both before there has been a sufficient quantity rubbed on, or time allowed for its action, supposing it operated by being taken into the blood veſsels, is there not some reason for believing it acts more particularly upon the nerves, and diminishes their sensibility? It is known, that the juice of belladonna dropt into the eye, almost immediately affects the sensibility of the optic nerve, and what gives probability to the conjecture that it acts more especially upon the nerves, is, that in those headachs, attended with a throbbing, in which there is an evident increased sensibility of the nerves, as shewn by the pulsation of the arteries being *perceived*, the tincture of tobacco almost constantly affords relief. In the same manner also in Opthalmy, the more perceptible to the patient is the throbbing or pulsation of the

temporal artery, with the more certainty, I expect a removal of the pain, by the tincture.

I cannot close these remarks upon the tinctura nicotianæ, as capable of removing the pain in the head, without mentioning one case, in which its power was remarkably apparent. The child of Mr. C. of Uttoxeter, about twelve months old, having the eyes much inflamed, with specks in each of them, was brought for my afsistance. I was informed that the child was constantly restlefs, had had but little sleep, and that much disturbed, for several nights, and that she had cried almost the whole of the journey. The temples and forehead had scarcely been rubbed with the tincture for eight minutes, before the child went to sleep, and the father, when next I saw him, to my surprise, informed me that she continued to sleep in the chaise, on the servant's lap, till they arrived home, a distance of more than thirty miles, except awakening for a few minutes three or four times.

It may, perhaps, ere this have struck my reader, that the tinctura nicotianæ, from its effect in easing pain, and its well known power on the constitution, may be a good substitute for the tinct. opii. With that intention, I have for several years been in the habit of using it, and with great success. Indeed, as far as I have been able to judge, it has as great power in abating the inflammation of the eye, and easing the pain, as the tinct. opii. It has also been tried in those other complaints which succeed to inflammation, in which I use tinct. opii, with an equal advantage.*

I know not to which medicine to give the preference in diseases of the eyes, as I have sometimes found the tinct. opii fail of

* In making the tinct. nicotian. for applying to the eye, I omit the camphor, and only put half the quantity of tobacco and spirit, but in obstinate cases, and those of long continuance, the camphor is at times an improvement. The *strong* tinct. nicotian. with camphor, I always use in protrusions of the iris, and often, when there are a number of red vessels visible in the cornea, after a long continued inflammation.

its wonted effect, when the tinct. nicotianæ, has answered the best intention; and at other times the case has been just the contrary. Were I to be deprived of the afsistance of one of the tinctures, and to make choice of which I would part with, I should reserve the tinct. nicotianæ, as in addition to its giving *equal relief* to the eye, it removes the pain of the head. At the same time, I wish not not to call in question the powers of the tinct. opii, which I acknowledge is a most excellent application, the merits of which, indeed, are too well established to be called in question. I only beg leave to call the attention of the practitioner to another powerful medicine, which has not hitherto been known, or properly appreciated.

The difference, in the nature of diseases, is sometimes so small as to escape the attention of the most diligent observer, and those medicines which, from the apparent similarity of the disease, we, à priori, should judge to be efficacious, on putting them to

the trial, shall disagree. From thence proceeds the advantage of a variety of medicines of a similar tendency; and if, by the above representation, I can effect the cure of but *one* complaint, which shall not have yielded to the *tinct. opii*, my purpose will, in some degree, be answered.

Additional Remarks on the Cure of Opthalmy.

HAVING now laid down different modes of cure for the Opthalmy, it will be necessary that I should enquire into their *comparative* merits, and point out to what cases each plan is best adapted; for as yet I have only taken a *general view* of the mode of treatment, without entering into the management of particular cases.

It will also be expected I should take notice of several other particulars, which are requisite to be attended to, in the cure of Opthalmy, but which has not been comprehended in the mode of treatment I have hitherto described.

I have said, that I consider an inflammation of the eye as a local disease; but I would by no means wish it to be understood, that I think internal medicines unnecefsary, or general means, at one time to diminish excitement, and at another to increase it, improper. So far from that being the case, I frequently make use of a variety of medicines to patients labouring under an Opthalmy; but still I regard the disease as strictly a local one, and the other symptoms requiring medicines, as accidental, arising either from the united action of the exciting cause, or depending upon some disease of the constitution. Every one must acknowledge, that it frequently is strictly local, with no increase of strength or velocity in the circulation; the appetite not in the least impaired, and the excretions and secretions performed as regularly and as pleasantly as usual.—In such cases practitioners generally rely upon topical remedies alone,

At other times the pulse is accelerated, attended with thirst and several other symptoms of fever, which are for the most part thought to indicate the propriety of a low diet, evacuations, antimonials, &c. but as these symptoms arise merely from the increased irritation of the inflamed part, if that can be removed, by applications to the part affected, the symptoms vanish. This irritation is caused by pain, either in the eye or the head, but most commonly in both; the spirit and water, or the tinctura opii, will generally remove the pain from the eye, and the tinct. nicotianæ from the other part.

There are, however, two kinds of Opthalmies, which require a different mode of treatment, but those it would be more proper to consider as two diseases existing at the same time, than as an Opthalmy only; each complaint aggravating and keeping up the diseased action of the other. The first is, when an Opthalmy comes on, attended with a considerable

degree of fever; after a person has been exposed to much irregularity of heat and cold, and moisture, or heat and cold, the inflammation of the eye, and probably the pain of the head, is severe, which causes the attention to be directed more immediately to that part, it is termed an Opthalmy, and the fever is considered only as incidental; whereas it often really happens, either that the fever is the principal disease, and the inflammation of the eye induced by some fortuitous circumstance, or they may both, in the first instance, be violent and induced by the same cause. In either of these latter instances, it would be the height of folly to expect the feverish complaint could be removed by any topical remedies applied to the eye and head. They ought to be considered as two diseases, and the fever should claim the first attention, for as long as that continues in any considerable degree, applications to the eye will be made use of to little purpose.

The other kind of Opthalmy that is difficult of management, is when the patient, at the same time, has a scrophulous or scorbutic habit. In such, but more particularly in the scorbutic,* though the pain of the eye and head may be trifling, and the inflammation apparently inconsiderable, the cure is often rendered peculiarly tedious. This tediousneſs appears to be owing to the unusual susceptibility of the constitution to various stimuli, and from a debility or want of tone in the system, to a deficient and irregular supply of the irritable principle; the removal of the complaint is frequently in vain looked for, unleſs with topical applications, a more generous diet is directed with change of air, small doses of opium, tonics, and a *rigid attention to avoid* the sudden transition from heat to cold, or the contrary.

The first thing to be done towards the cure of an inflammation of the eye is, to remove every kind of unneceſsary irritation,

* Part 1, page 25.

that may accelerate the circulation of the whole body or of the part affected.

With respect to the removal of general irritating causes, the mode of living should be rather more abstemious than usual, but there will be no necefsity for adopting a strict antiphlogistic regimen, which I have often known very much to protract the cure, and induce atonic inflammation. The bowels should be kept in a lax state, as costivenefs is frequently productive of an increase of the pain of the head; indeed it will be a safe and salutary practice, to give a gentle laxative in the beginning of the complaint, and repeat it every two or three days during its continuance; but drastic purgatives I consider as improper, having the same injurious effects as I have just attributed to a very meagre diet.

In order to avoid local irritation and relieve the inordinate contractions of the vefsels, the light, which is usually a great source of inconvenience, should not be admitted to the eye in such a quantity as to

occasion pain. With the intention of guarding the eye from the light, as well as to prevent the motion of the eye, some have bound compreſses or plasters tight over the eyes. This method must have been injurious, both by confining the tears, and by their preſsure increasing the heat of the part. A much more preferable way is, to exclude the neceſsary degree of light, by means of a pasteboard hood or shade, as described in the first part of this treatise.

Any adhesive or purulent like matter that may be formed, should be carefully, though *gently* removed from the eye or eye-lids. In some cases, the formation of the adhesive matter, or in others a kind of stringy fibrous substance, is extremely troublesome, adhering to the surface of the eye or the inside of the lids, in which case the least motion of the eye is attended with an acute pain, as if some sharp body were cutting the eye. When that sensation is felt the lids should be cautiously separated, and a bit of fine rag being twice doubled,

the angle formed by the doubling being paſsed between the lids, the matter may be easily extracted.

I know there are some who deprecate the meddling with the eye when it is inflamed, and who go so far as to maintain, that the eye ought never to be inspected in its irritable state; but how often are there extraneous bodies inserted between the lids, which are the cause of the inflammation, and which, if the eye is not seen, of courſe cannot be removed? No one can be more cautious than myself in endeavouring to avoid every unneceſsary violence to the inflamed eye, but it by no means prevents me from freely inspecting it, and frequently it has happened, that, after the patient has suffered the most tormenting pain for hours, I have immediately alleviated his sufferings by removing particles of matter which were adhering to the surface of the eye or the inside of the lids. Cases sometimes occur in which it is neceſsary to free the eye from the matter every half hour. After a little

experience, it is distinctly perceived, by the sensation, whether the pain proceeds from the irritation of matter, or from the occasional increased action of the vessels, which so frequently occurs in Opthalmy.

To moderate the action of the vessels, and to substract some of the increased heat, water may be applied to the eye of from 70 to 80 degrees; when it is applied at a lower temperature, as between 30 or 40, though it gives temporary ease, it has generally appeared to me to increase the inflammation, by causing an accumulation of the irritable principle. The bathing with water, however, of the above degree of heat, is a practice I seldom recommend, as the irritation produced upon the lids, unless care is taken in the application, may do an injury equal to the benefit that may be expected from the water; there are, however, some patients of great timidity, who object to every thing that gives pain, who may occasionally make use of *cool* water with advantage, in which case they ought

to apply it for an hour at a time, and almost constantly; but in such cases I should give the preference to warm water, applied as before directed every hour or two, or as often as the eye feels unusually hot or more painful.

It has been suposed, that for substracting the heat, a moist rag constantly applied to the eye would answer better. I have not, however, found it so, as, in that case, the eye must be kept shut, and the action of the water will be confined almost exclusively to the lids, as it will extend its influence only in a small degree to the eye. Whenever the conjunctiva is not swelled, and the motion of the lids not attended with pain, the eye should *always* be uncovered, and kept open as much as can be done conveniently, by which means cool air is continually applied to the lids, as well as to the part *immediately affected*, and a very considerable cooling procefs is perpetually going on, by the *increased evaporation from the moist surface of the conjunctiva*,

and which would be prevented by the closing of the lids. The grateful effect experienced by the admifsion of cool air to the surface of the conjunctiva, instead of keeping the lids moist with a rag, would hardly be supposed, à priori, but I have often known a removal of the coverings from the eye, and the free admifsion of the air, followed by an immediate amendment.

Having endeavoured to avoid every source of irritation, the next subject that presents itself is, to consider what topical means are best calculated for removing the inflammation. I have mentioned, particularly, for that purpose, the three following applications, *hot water*, *diluted alcohol*, and *tinct. opii.*

Though I consider hot water as very serviceable, and as often solely able to remove the complaint, two cases of which I shall shortly mention, I very seldom rely upon that alone, as there are other applications which are more efficacious. At the same time, afsistance is often to be received

from it, and in most cases some advantage will be derived from its application night and morning, and when there is much discharge from the eye, or excoriation of the lids, it should be applied four or five times a day.

The application of hot water is generally attended with subsequent ease, and may be applied with a probability of advantage in all cases but one, in which it ought *never* to be used; that is, when the eye is in *violent* pain, attended with a throbbing in the eye, and an incipient formation of matter, in producing a speck. By the use of hot water, at that time, a more rapid formation of the matter will take place, a circumstance which ought carefully to be guarded against, as the chief danger of an Opthalmy, in injuring the sight, is the formation of matter, which might leave the cornea opaque and intercept the rays of light towards the retina. In like manner, when the pain has been violent, as just described, I have several times known

a very serious injury done to the eye by a long continued application of a *hot fomentation* of poppy heads. As soon as the pain subsides, and the peculiar action which takes place in the formation of pus has ceased, the water may again be made use of.

Of all the applications I have ever made trial of in Opthalmy, alcohol and water, applied as before directed, is the remedy from which I have experienced the greatest relief. It has seldom disappointed my expectations, and has this advantage over all others, that it may be applied with propriety at almost *all times*, and in almost *all cases*, and almost constantly with some succeſs.

At the same time, it must be observed, that this succeſs is by no means uniform, and that there are cases in which other applications, particularly tinct. opii vel nicotianæ, have the preference. This succeſs is to be ascribed, sometimes, to the superiority of its curative power, but most

generally because the spirit and water cannot be *properly* applied.

There are some people who have so much timidity, and are so averse to continued pain, though it may be trifling, as well as impatient of the confinement to one posture, which the application of the diluted alcohol requires, that it is found improper to apply it. When that is the case, it will be better liberally to bathe the eyes with hot water, and drop in the *tinct. opii mit.* twice or thrice a day.

In children, also, the application of the alcohol is evidently impracticable, and with them the tinct. op. mit. should be had recourse to, and applied twice a day, keeping the eye clean by the occasional use of warm water.

With respect to the comparative merits of diluted alcohol and tinct. opii, if I may be allowed to judge from my own experience, I would say, that at the commencement of an Opthalmy, and wherever there is much discharge from the eye, the alcohol

mixture has much the preference; or, perhaps, more properly speaking, that mode of applying the stimulus is the best, for most probably tinct. opii might be so diluted, with certain proportions of alcohol and water, as to have a similar effect; but that after it has continued for some time, the tinct. opii appears to afford equal, and in some instances greater relief. By a combination of both remedies, I have often thought I have succeeded better than I could with either separately. At one time I have dropt in the tinct. opii, once a day, or perhaps only every other day; at another I have ordered the tincture to be regularly dropt into the eye *each time immediately after* using the diluted alcohol.

In all cases of pain in the head and throbbing in the temple, I would recommend, in addition to the means just mentioned, the application of the tinct. nicotianæ thrice a day to the temple and forehead, and as often as the pain returns. As the application of the tincture gives no

pain and can be so easily applied, it is peculiarly useful in the inflamed eyes of children. It frequently affords so much relief that it is no uncommon circumstance for them to go to sleep shortly after the temples have been rubbed with it.

When the inflammation has been of long continuance and has put on the atonic form,* a different mode of treatment is required than at the beginning of the inflammation. The veſsels are become enlarged in their diameters, and seem to have no disposition to return to their former state, from being accustomed to their present degree of stimulus.† An additional stimulus must therefore be applied to them for about half a minute at a time, two or three times a day, which will excite an increased action and shortly make them contract to their former dimensions. For that purpose

* Vid. Part First, page 8.

† Something similar happens in the chronic rheumatism, or the indolent state of an old ulcer.

may be applied, a lotion of about ℥ſs. alcohol to ℥iv. water or aqua zinci vitriolata,* or *cold* water by means of a glaſs. Cold water will only be useful in cauſing a reaction or an accumulation of the irritable principle, to accomplish that intention the eye lids should be freely and quickly moved in the water, and when a torpor takes place in the levator palpebræ superioris, which will shortly happen if the water is very cold, when it will be incapable of motion without pain, the eye should be withdrawn, and as soon as the muscle has recovered its action should be again immerged in the water, and repeated in the same manner four or five times. A pinch of snuff will also be serviceable once or twice a day as it increases the action of the parts in the vicinity of the eye. With the same intention likewise, a blister will be *highly* serviceable, either applied behind the ear or to the nape of the neck, and repeated every five or six days, till the

* Prepared as mentioned in latter Part.

inflammation is removed. Advantage also, is sometimes gained by the internal exhibition of tonics, as bark, either in substance or decoction, bitters, &c. with six or eight drops of tincture of opium, three times a day.

On those Affections of the Eye which succeed the Opthalmy.

The inflammation of the eye is only so far dangerous, as it is the cause of other diseased actions in different parts of the eye, the most frequent among which are opacities* or specks in the cornea. Authors have divided them into a variety of kinds, but as that answers no good purpose in directing our practice, I shall confine these few remarks to two species only, which will comprehend every other variety, viz. the speck which has no external opening, the

* Vid. Part i. page 9.

matter being confined between the laminæ of the cornea, and that which has broken its horny walls, and formed a small hole or depreſsion in the cornea, which has justly been considered as an ulcer.

Upon macerating the cornea, it may be divided into several laminæ, or skins, but it more easily separates about the middle, and it has been supposed that the anterior part is derived from the albuginea, whilst the posterior is formed by a continuation of the tunica sclerotica. Between these two divisions of the cornea, matter is not unusually deposited, and, as it meets with a considerable resistance each way, it frequently finds leſs difficulty in separating the connecting medium of the two laminæ, than in protruding the part of the cornea, which is anterior to it, and by that means making an external opening. Hence, the cornea is sometimes seen wholly opaque, and of the colour of pus. Most usually, however, the matter is confined to a small part of it with little or no projection. This

matter having no external exit, if it is removed, must be taken up by the absorbents: our attention, therefore, should be directed to the keeping up a proper action in them.

As long as the inflammation is in any degree considerable, it ought to claim our *chief attention*, for whilst that is subsiding, the action of the absorbents will be going on vigorously, and the opacity will be a good deal diminished. If, on the other hand, those stimulants, which are generally found serviceable in removing specks, were to be applied at an *early period* of the complaint, the inflammation might return, or at least so great an action would take place, that the secreting vefsels would be improperly excited, and more would be secreted than absorbed. Something similar frequently happens in applying strong escharotics and corrosives, in attempting to remove *old* opacities of the cornea, which is sometimes done, when the opacity is increased instead of being diminished.

A moderate action should be constantly kept up, but if that goes beyond certain limits an injury is done to the eye, and I lay it down as a general rule, that supposing the application is made use of once a day, if the eye shews much of its effect *two hours* after the application, it is too strong. But it is, I think, a much better practice to apply *gentle* stimulants, and more frequently, as two or three times a day, than run any risk of of producing inflammation by an occasional severe dreſsing.

It is probable, that when the eye is irritated by some stimulating substance, the extremities of the arteries, throw out a greater quantity of fluid than usual, which is taken up again by the absorbents, which continue their action *longer* than the secreting veſsels, so that if, from the violence or long continued action of the application, more is thrown out than can be *immediately* absorbed, the continued action of the absorbents is employed in removing what has been *just deposited*, and the former

opacity is not diminished, but that if the stimulus has been more moderate, the longer increased action of the absorbing veſsels removes a portion of the specks.

If a lotion is made use of to remove the opacity, it should be *transparent*, and may be a solution of sulphate of zinc. gr. xx. to ℥ i. a solution of the hydrargyrus muriatus, gr. i. ad ℥ i. or of a solution of a sulphate of copper, five or six drops to be dropt into the eye twice or thrice a day.

If a powder is preferred, it should be such as will diſsolve readily in the eye, otherwise the degree of action, that is wished to be excited, cannot be managed, as some of the particles may adhere to the surface of the eye, and keep up an undue degree of irritation for an improper time. All the acids, uniting with any of the alkalies, forming neutral salts, will do; or what is frequently made use of, and in many instances answers extremely well, is refined sugar, finely powdered. The sugar seems to act more particularly by its rough-

nefs, attention therefore should be paid to the degree of purity of the sugar, and the finenefs of its pulverization.

Cases are frequently met with, in which the sugar alone is not sufficiently powerful; I then find an addition of common salt, deprived of its water by decripitation, or nitre finely powdered, answers very well. But when the eye has an unusual glafsy appearance, and very soon recovers itself after the application of stimulants, I add borax finely levigated, which, as it dissolves more slowly, and is a very hard salt, is more applicable.

If an ointment is thought more convenient, the powders just mentioned may be mixed up with some mild ointment, which ought to consist principally of butter or hog's lard, for if it contains much wax, it will not difsolve in the eye so readily, and will feel more unpleasant.

It sometimes, though more rarely, happens, that from the matter forming nearer the surface of the eye, a part of the cornea

anterior to it, projects and forms a speck which appears like an extraneous substance upon its surface; this should be punctured with a lancet, or it would be better to remove a portion of its substance with the same instrument. I have in such cases applied caustic, but from the inflammation which is generally produced, by the part destroyed, acting as an extraneous substance for sometime afterwards, I very much give the preference to the former method.

Caustic also has been strongly recommended to remove or destroy all kinds of opacities in the cornea, and has been put in practice by some Charlatans, but with little succefs. In a very few cases of specks of long continuance, for I should hope it had never been attempted in recent ones, some little advantage has been gained, but by far the majority have been made much worse by the subsequent inflammation.

There are many cases, that supposing it pofsible to remove the *whole* of the *opacity*,

little advantage would be gained, as the irregular figure of the cornea would prevent distinct vision, as happens after the cure of a large ulcer of the cornea.

Cases occasionally are met with, in which several small vessels are seen running from the conjunctiva to the cornea and into the speck. Unless these are removed, the opacity will either not diminish at all or very gradually. To destroy them, a drop or two of tinct. opii, or nicotian. should be dropt into the eye once or twice a day; but what ought never to be omitted when practicable, is the division of the vessels with a lancet. If the incisions are made with care, near the circumference of the cornea, no injury can arise from it, and a diminution of the speck will be soon perceived.

When the matter has ruptured the cornea anteriorly, it forms a hole or depression which produces an ulcer, in size proportioned to the quantity of the matter, the surface of which for some distance round

is opaque. If unaſsisted by art, it is often tedious in healing, and prolongs the inflammation by keeping up a constant irritation in the eye. If, in addition to the means before directed for the Opthalmy, the point of a small camel hair pencil is dipt in a strong solution of sulphate of copper, and the part affected slightly touched with it once a day, it will shortly heal; when the remaining opacity is to be treated as if there had been no ulcer.

On matter in the cornea forming an external opening, the cornea is often so much weakened in that part, as to give way, when the aperture is filled up by the iris protruding through the wound, forming a dark spot which projects beyond the surface of the eye, and rubbing against the inside of the lids, causes considerable irritation, and by the usual methods of treatment is often very tedious in the cure. In such cases I dip a camel hair pencil in a strong tincture of opium, and touch the projecting part of the iris with it twice a

day; when it is often surprising how soon it retracts, and the wound of the cornea heals. At other times I make use of the tincture of tobacco, with camphor, which seems to answer every purpose of the tinct. opii. and in some cases has a still better effect.

The effect of mercury in increasing the action of the absorbent system being well known, it has been recommended in opacities of the cornea. I have often thought I have received afsistance from repeated small doses of calomel, and when the patient with the opacity has had strumous swellings, a fourth part of a grain of calomel taken every night, and the bark, has often improved the general health, and probably expedited the removal of the opacity.

Few, I presume, would think of giving mercury in such quantities as to affect the system; yet, some years since, a curious case occurred in Saint Thomas's Hospital, in London, which strikingly shews the absorbing power of mercury:—A man who

had been blind with one eye for several years, in consequence of a violent inflammation, came into the Hospital to be cured of a venereal affection: whilst undergoing salivation, he thought he perceived light with his blind eye; the light gradually became stronger, the opacity was in part speedily absorbed, and when he left the Hospital, he had a good sight with the eye, although, as I have just said, he had been perfectly blind for years.

Medical men are often consulted for opacities of the cornea of the duration of years; what can be done in such cases, or for how long a period after the inflammation has subsided, may we expect applications will have any beneficial effect? When great injury has been done to the structure of the cornea, the sclerotica, and conjunctiva, I have known the sight continue to improve for two or three years, and sometimes longer, but when *no amendment* has been perceived for the last three months, little is to be expected from medical aid.

A large opacity of the cornea seems to depend upon two causes, a deposition of matter between its laminæ and a disorganization of its structure; the former *may* be removed, the latter can be so only in a small degree.

I would, however, have every opacity of long continuance minutely examined, and if *there are any veſsels visible in it*, the probability of improving the sight is great. In many cases, where the degree of sight has been stationary for years, on examining the eye, I have at times found one or two large red veſsels, running into the opacity: at others, many extremely minute, which gave the speck a reddish tinge, and could not be discovered to be veſsels without the aſsistance of a glaſs. By dividing the large veſsels, and frequently rubbing the edge of a lancet over the small ones, aſsisted by the tincture of opium, in a few weeks, the speck is in general visibly decreased. A continuance in the same method, as long as any veſsels are visible, and afterwards

the use of those applications which have already been recommended, will make a favourable change in many cases which have been considered as hopeleſs.

When the internal structure of the eye appears to be damaged by the enlargement of the globe, accompanied with any considerable disease of the cornea, the complaint may be considered as hopeleſs, and our efforts to relieve unavailing.

When matter is deposited in the anterior chamber, forming the onyx, if the cornea is not diseased, on the subsiding of the inflammation it is absorbed and disappears, without any particular mode of treatment.

If, unfortunately, both the chambers of the eye are filled with matter, the case becomes more alarming, and it is to be feared that some part of the pus may become inspiſsated, adhere to the capsule of the chrystalline lens, and irreparably injure, if not destroy, vision. But it generally happens, when there is a considerable quantity of matter deposited in the eye, that the

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inflammation runs so high, that suppuration takes place in the cornea, which breaks, and an exit is allowed to the pus, with, at the same time, part or the whole of the contents of the globe, the eye collapses, and the sight is completely lost.

Although opacities of the cornea are the most usual consequence of an inflammation of the eye, the veſsels, at other times, aſsume different actions. Occasionally, there is a collection of new veſsels on the conjunctiva, confined to one part, generally running from the greater angle towards the cornea; at other times, though leſs frequent, from the leſser angle, and seldom in any other direction. They seem to lie, as it were, on the surface of the conjunctiva, and are generally about the breadth of a straw.

To remove them, two drops of the tincture of opium, or tobacco, should be dropt into the eye, twice a day, after bathing the eye with a weak solution of sulphate of zinc. But what answers better,

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and is much more speedy in removing the complaint, is a complete division of the veſsels. This may be done by cutting them acroſs, with a lancet, four or five times, in nearly the same place, that the wounds may not again unite by the first intention, but a slight suppuration come on, by which they will be obliterated, and the supply of blood cut off. If they were to be simply divided, the small wound would speedily heal, and little advantage would be gained.

It has been recommended, in such cases, to paſs a small hook underneath the veſsels, and elevating them, cut off a portion with a pair of curved sciſsors, or a scalpel. It would, no doubt, be an effectual way of destroying them, but the pain that it gives is considerable, and it often excites a great degree of inflammation; on those accounts, I prefer a division of them with a lancet, which very seldom fails of succeſs, and if it should do so, it gives little pain, and can be easily repeated till it has fully answered the purpose intended.

In those cases in which veſsels are seen in the cornea, carrying red blood, a circumstance next to specks, the most frequently attendant upon the Opthalmy, and which not seldom accompany each other, the cure is often protracted to a considerable length of time, and upon which the common collyria have little effect. This appears to be owing to their gradually being produced, and from that circumstance, to the difficulty of their contracting to their former size, or, as I think, of their being absorbed.

The veſsels require either a violent stimulus suddenly applied, or the division of them by an instrument. A drop or two of the tincture of opium or of tobacco, dropt into the eye, twice a day, is an excellent remedy, under which they speedily disappear. But where the eye can easily bear the light, and the patient is not too timid, the veſsels should by all means be divided. The patient being placed fronting the light, and the upper lid elevated by an aſsistant, the operator depreſsing the lower

lid with the left hand, and holding a lancet *very loosely* between the thumb and forefinger of the right, paſses the instrument *lightly* over the *most conspicuous* of the veſsels, near the circumference of the cornea, which immediately shew the effect of the touch by the cornea being tinged with blood. In dividing the veſsels, on the superior part of the cornea, it will be done with greater facility, by the operator standing behind the patient and himself elevating the upper lid, when he can rest his hand upon the forehead, which will give him what is requisite for the succeſs of the operation, much greater steadineſs, as well as being more convenient than resting it upon the cheek or temple.

When the operation is properly performed, the patient is not conscious of the division of the veſsels from the lightneſs of the preſsure and the little sensibility of the cornea. Immediately afterwards two drops of one of the tinctures should be dropt into the eye, which seem at that time to have a

more salutary effect, upon the veſsels just divided and emptied of their blood. This little operation should be repeated every day, or at least every other, when, in general, unleſs the cornea has been much diseased, after a few times the complaint will be removed.

It perhaps may be supposed that these frequent incisions upon the cornea will produce opacities and obstruct vision. If the veſsels are lightly divided, as directed, the wounds are invisible a few hours afterwards, of course no injury of that kind can arise; but supposing the lancet should go deeper than is strictly required, and supposing even that a small opaque mark is left, it will not be of the least consequence, for, since the veſsels are divided near to where the cornea unites to the sclerotica, it will not injure vision, as all rays of light that fall upon the eye so obliquely will strike against the iris, and not entering the pupil, can have no effect on the retina. When, from the inflammation having ex-

tended to the iris, red veſsels are viſible upon its ſurface, which never happens unleſs after a long and violent diſease, the complaint becomes ſerious, as there is much danger, leſt they ſhould extend to the capsule of the crystalline lens and obliterate the pupil, or render the capsule opaque, when the diſease often affects the lens, and viſion is deſtroyed. As long as the inflammation continues, the tincture of opium or tobacco ſhould be applied twice a day; on that ſubſiding ſome other ſtimulating application ſhould be used which is more durable in its effect, once or twice a day, of a ſtrength proportioned to the irritability of the eye, ſuch as a lotion of æther and water, or a ſolution of hydrargyrus muriatus, or the powders recommended in opacities of the cornea; but what I generally uſe is common table ſalt (muriate of ſoda) deprived of its water, by being expoſed to a red heat, and when cool *immediately* powdered and mixed with an ointment. This may be applied of different ſtrengths, or more

or leſs frequent to produce the exact degree of irritation that is wished. A continuance in the use of some of these applications for several weeks, I have repeatedly known to restore vision in a considerable degree.

When treating on the consequences of inflammation, on the different parts of the eye, in the First Part,* I had occasion to take notice of an opacity of the lens. I there mentioned some succeſs I had had in diſsipating the opacity, which I believe is now generally understood to constitute the cataract, and I ventured to suggest a hope, that by perseverance in proper applications, the operation might, in some instances, be superseded. I did not then know that Mr. Ware had been labouring in the same field, and that he had given an account of his succeſs in a pamphlet published 1795, to which I beg to refer.†

* Page 16.

† An Enquiry into the Causes which have most commonly prevented Succeſs in the Practice of Extracting the Cataract, with an account of the means by which they may be either avoided or rectified; to which are added, Observations on the Diſsipation of the Cataract, &c.

These observations will, in some degree, render unnecefsary what I have to say upon the same subject. To those who cannot conveniently have accefs to Mr. Ware's publication, it may be necefsary to mention, that he was induced to make trial of stimulants, in cataracts, from a case which came under his care of a gentleman, who, after having an opacity of the lens for 11 years, was cured by an accidental inflammation of the eye. He mentions, that in eight or ten cases, the difsipation of the cataracts was accomplished by means of æther applied to the eyes with a camel hair pencil. At times he diluted the æther with a third or fourth part of a weak solution of hydrargyrus muriatus, and in a few instances, he mixed an equal quantity of oil of amber with the æther, but knows not if the succefs was increased by the addition. Mr. W. fays, "the application of this remedy occasions a very pungent pain in the eye, with considerable rednefs in the tunica conjunctiva, but these go off

in a few minutes, and leave the eye as easy, and the conjunctiva as pale, as they were before the æther was applied. By this excitement of inflammation, and by the increased action it occasions, in the different parts of the eye, I presume it is, that the æther promotes the dissipation of the opaque crystalline." And he also observes, "that it should be recollected, that *all* the cases of cataract, to which I here refer as having undergone this favorable change, (of being absorbed) during the application of æther to the eyes, were produced by external violence."

I am also obliged to confess, that though I have repeatedly dissipated opaque crystallines,* they have either been occasioned

* The first that was absorbed, under my direction, was about ten years since. A boy, 14 years of age, in gathering gooseberries, was struck by a bough that, with a sudden spring, flew against the eye. Little inflammation was excited, but in a few days he found he had lost the sight of it. In about a week I saw him, when I found the crystalline was opaque. I ordered him some snuff, whose principal ingredient was hellebore, a pinch to be taken every morning

by external violence, or, which is not mentioned by Mr. Ware, in consequence of a long continued and violent inflammation.

As this subject is deserving of our minutest enquiries, from its importance to many individuals, and from the terror and uncertainty of a formidable operation, I must beg leave to state the following observations, in the hope that the minds of medical men may be more decidedly made up, on the degree of probability of the success of their laudable endeavours to dissipate cataracts.

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and the following ointment, the size of a small pea, to be put into the eye twice a day: ℞ Sacch. purific. ʒ ſs. Sal. muriat. exsiccat. ʒi. ung. adip. suillæ. ʒiii. M. fiat unguentum. In a fortnight there was a dark streak to be seen running across the lens, which divided it into two unequal portions, and there was some little motion in it, on moving the lids. Repetat. ung. & pulv. sternutat. In three weeks more the sight had returned, and the lens was absorbed, except a portion of the size of the head of a small pin, which was visible in the inferior part of the pupil inclining towards the nose. I desired him to continue the ointment, which always made his eyes very red for half an hour after using, and as he came from the country, I have not seen him since.

It has already been observed, that cataracts have been repeatedly dispersed, when they have proceeded from blows, or after an inflammation, but *never* from causes, which are produced from some particular change in the constitution of the eye. Since that appears to be an undoubted fact; and since the crystalline lens is opaque in both instances, and is absorbed or becomes clear only in one, *what difference is there in the cause, which produces a similar effect, yet so dissimilar in its consequences?*

To clearly *demonstrate* this difference, it would be necessary to shew in what way the crystalline lens is nourished, and whether vessels pass into its body from its capsule, but here the finest injections of the anatomists have *generally* failed, and it is commonly considered as doubtful, whether it has vessels which penetrate its body. Some learned men, skilful in the art of injecting, and persevering in their anatomical researches, have by repeated attempts, either demonstrated these vessels, or rendered it

extremely probable that there are such. Winslow says, that in a fœtus, and new born children, a fine injection has succeeded so well as to discover the veſsels of the membrana crystallina, and vitrea; and in a fœtus of about six months old, the injected liquor seemed to him to *have penetrated a part of the crystalline and vitreous humour*. Zinn, also, is of opinion, that veſsels paſs into the body of the lens;* and Dr. Hovius, of Leipsic,† not only gives an account of the veſsels of the crystalline lens, but goes so far as to give a drawing of it, with its veſsels, as seen by him, from his preparation.

In his preface to the above work, he has these words, "et ne quid intactum ac igno-

* Dr. Porterfield mentions not a word about any circulation in the crystalline humour, and I confeſs I was a good deal disappointed in examining the celebrated Monro's, Treatise on the Eye, to find he had not taken the least notice how the lens was nourished, or if it had any veſsels that entered its body.

† Jacobi Hovii tractatus de circulari humorum motu in oculis, &c. 1716.

tum relinquerem, verum, ut intima summeque intricata hujus circulationis arcana indagine exactiſsima ex occultis naturæ latebris pro voto in apricum proferrem, præter ingentem oculorum ex variis animantium generibus desumptorum copiam, materiam pro injectione tam subtilem præparavi, ut non dubitarem, quin singula in hac materia naturæ abdita arcana penetus eruerem, nec mea me fefellit opinio, *minutiſsima enim vascula humoris vitrei æque ac crystallini provinciam formantia, cæteraque neuro-lymphatica pervadebat.*" Speaking of the crystalline lens, he says, " est itaque humor crystallinus *contextum mere vasculosum*, e nervis pellucidis neuroque lymphaticis, tum *ad*, *tum abducentibus vasis constructum*, tenuiſsima & pellucida tunica obductum.

" At licet idem fere de vitreo humore aſseveraſse videar, discrepantia tamen humorem hunc illumve inter reperitur maxima."

" Vasa enim hujus sunt multo longiora, nullas aut saltem perpaucas admittunt sub-

divisones, ab una parte intrant, & ex opposita humorem deserunt; in crystallino vero *arctiora & firmius compacta sunt, imperscrutabilis subeunt subdivisiones ut juxta* Cl. Leeuwenhoekii *sententiam millesimam crinis partem vix adæquent*, neque in opposito latere illum deserunt, ast *lamellas scammas piscium ad instar sibi mutuo superstratas efformant*; nec *sine ratione gravi suspicamur, unicuique lamellæ* PROPRIUM SUUM VAS AD & ABDUCENS *dicatum esse, dum nostra si resolvetur methodo* OMNES LAMELLÆ ABSQUE ULLA FERE COMMUNICATIONE A SE INVICEM CEDUNT."

Independent of these authorities, analogy, I should think, ought sufficiently to justify the conclusion, that since no other part of the body, which is excluded from the air, is devoid of vessels, we may suppose the crystalline lens is not an exception to the general rule.

But, it has been said, injections shew not these vessels. Because injections cannot easily be made to pass into the body of

the lens, is that a sufficient proof it has none? By no means: it is required that the vessels should be extremely minute, and their coats so *very fine* and transparent, as to cause no irregular refraction of the rays of light, in passing to the retina; my greatest surprise therefore is, that an injection should *ever* be so successful as to penetrate its body. Inject what part of the body you please, and there will be innumerable vessels, so minute as not to suffer the injection to pass.

There is, however, no occasion for relying upon analogy, as there are facts which, by inductive reasoning, prove beyond a doubt, that the crystalline lens has vessels which perform the offices of arteries, veins, and absorbents.

In the fœtal state, the crystalline lens is larger, in proportion to the other parts of the eye, than at any other period. When the child is born, it is still large, frequently so much so, as to touch the iris, when the eye has no posterior chamber. It is

also perfectly transparent and soft. Being transparent and soft or nearly fluid, its refractive power will be small; it requires, therefore, to be proportionably larger, that the rays of light may meet at a point on the retina. As we advance in years, it becomes smaller and more dense, and from being perfectly transparent has a yellowish tinge. How could these changes take place, unlefs by supposing a circulation in its body?

When the cataract is succefsfully treated, by external applications, there are dark streaks seen running in different directions, which sometimes divide it into two, at other times into four or six portions. These streaks or divisions become larger as the cataract is difsipated, till at length the pupil becomes clear. If the cataract was not absorbed by vefsels running in *different directions* into its body, but by the vefsels opening into the *interior* of the capsule, would not the external part of it only be absorbed at first, and the cataract gradually

dissolve, as it were, and to the last preserve its original figure?

And lastly, if the lens had not vessels to connect together the different parts, what would prevent these portions of the lens, as they diminished in size, from falling into one confused mass to the inferior part of the capsule. Whereas, supposing the division should take place horizontally, as in the direction of the angles of the lids, this dark streak would continue to increase, through which light would be admitted for the purposes of vision; the two pieces would become smaller, but still they would not approximate. On rubbing the eye with the finger, with the lids closed, and suddenly opening it, the apparently detached portions of the lens will be seen to move, as if they had been displaced by the finger, and had sprang again to their former situation, by the pressure being removed. I presume this must happen from there being a body, tho' from its transparency invisible, between the two opaque pieces.

From hence it would appear, that not the entire lens, but only the opacity is absorbed; that it becomes clearer and softer, and, being smaller than in infancy, requires the aid of convex glafses to cause distinct vision.

Taking it for granted then, that the lens has vefsels by which it receives nourishment, I would solve, in this manner, the problem why a cataract, that proceeds from an external injury or an inflammation, is absorbed, but *never* from a change, that takes place in the eye, in consequence of age. When a cataract proceeds from external violence, an inflammation is produced, which causes an increased action of the vefsels of the crystalline lens. The same is seen in the cornea transparens, the only transparent dense body where we can look for analogy, which becomes opaque under similar circumstances. By opaque, in this place, I mean, not a collection of matter between the laminæ of the cornea, but that brownish white, the *colour* of a

cataract, which is seen to surround an ulcer in the cornea, or after any extraneous body has been fixed in it for several days. In those cases it is always found; but occasionally nearly the whole of the cornea is changed to the same appearance.

As soon as the increased action in the veſsels of the cornea diminishes, by the inflammation abating, the absorbents being in their full vigour, set to work and absorb the opaque particles; they will do this the more rapidly if aſsisted by gentle stimulants when the cornea again becomes transparent. So also in the first species of cataract, when the inflammation subsides, the absorbents act with increased vigour, when, particularly if aſsisted by stimulants, they take up and remove the opacity.

On the other hand, when a cataract is the consequence of age, the veſsels become more small, and some of them will be obliterated; at the same time, part of the absorbents will be destroyed, and the remainder greatly lose their activity. Stimulants are

then applied in vain, for the absorbents, having lost their power, cannot answer to the exciting applications. Thus, in the cornea of old people, from a defect of vigour in the vefsels, or an obliteration of them, the circumference becomes opaque, and in some instances, the opacity extends over almost the whole of the cornea, leaving in the centre a clear space, barely sufficient to admit light enough for vision.

That a want of action, or a destruction of the vefsels, will render the lens opaque is evident, from it always becoming so when forced from its capsule by external violence, innumerable instances of which are upon record, when it *always* afsumes the appearance of a cataract. In a short time after death also, the centre of the lens becomes opaque, and resembles a small white spot.

From what has been said, we are led to the following conclusions:

That a cataract, succeeding an inflammation of the eye, or arising from external violence, *may* and *often* is cured.

That a cataract, caused by a change in the veſsels from age, *cannot*, and that an operation holds out the only chance of having vision restored.

That a person having cataracts from his birth, affords a *hope*, that the absorbents may be brought into action, and the opacity removed.

That stimulants may stop, or at least *protract* the progreſs of the cataract, when coming on in consequence of age.

Upon each of these conclusions I beg to make a few practical remarks. With respect to the first kind of cataract, I have removed many opacities, which have been caused by external violence, or from an inflammation, and I can only recollect two instances of cataracts, uncombined with any other disease of the eye, in which I have failed. One of them was a young lady, who, in lacing her mother's boot, broke the tape, when her hand struck directly upon the ball of the eye; it is probable, therefore, that the connecting veſsels

between the lens and its capsule were ruptured. When the lens is opaque in consequence of a wound, the instrument generally pierces the cornea, wounds the iris, and touches the lens. The inflammation that follows, often causes an adhesion between the iris and the lens; when, at times, the pupil is nearly obliterated.

In some cases of that kind, which, at first view, one would be inclined to consider as incurable, the sight has frequently been restored. I had lately a man under my care, whose cornea was pierced transversely, in an oblique direction, so that one-third of the diameter of the cornea was divided, and the point of it appeared to have pierced the iris. Three weeks after the accident I saw him; the lens was opaque, with an adhesion of the iris, which closed half the pupil. The iris was immoveable. I applied, twice a day, equal parts of æther and tinct. opii, and an ointment with hydrarg. nitrat. rub. I afterwards made use of an ointment prepared with

equal parts of muriate of soda, and simple ointment. He continued the ointment once a day which always took a considerable effect upon his eye, and at the end of *six months* he thought he perceived more light than usual, which, in a few days, he was confirmed in, by obscurely discerning large objects.—August, 1801—three months more are now elapsed, and the opacity is not quite removed, though he can read a large print.—October 5—as the man lives a distance from Birmingham, I have not seen him since, but suppose the cataract will be entirely absorbed. As the opacity in this man did not yield under six months, though I have some reason to believe he was not very punctual in using the applications, it would appear that we ought not too soon to consider a case as hopeless; for time may either produce a change in the action of the absorbents, or a long continued use of the applications may effect that which dressing the eye for a few weeks might not be able to accomplish.

In several cases of opacity of the lens, brought on without any perceptible cause, I have given the cataract every chance of being absorbed, by keeping the eye in a constant ſtate of irritation for three months; but in no one instance have I been able to make any favourable change in the disease, and I have now given up every attempt of curing it by external means, unleſs urged to it by my patients.

On the third head, I am sorry to say, I have not hitherto succeeded; but, at present, I do not despair of succeſs. I have prescribed for three who were born with cataracts. The applications were made use of from one to two months, but not with that punctuality, or carried to that degree, I could have wished. I have now two other cases under my care, and as the parents wish every attempt to be made to remove the compaint, I ſhall not fail to take advantage of the opportunity.

On the last conclusion, I am happy to say, I have been more fortunate. Some,

who, apparently, had a cataract forming, I have completely cured; in others, in which the opacity of the lens was considerable, I have arrested the disorder for many months, and in others for years; but, in these cases, an *early* recurrence to the stimulating plan is solely to be relied upon. If the drops, mentioned below, are applied every morning, and the ointment at night, or, in some cases, even every other night, it will generally be sufficient on the *first* appearance of a cataract.

The applications I generally make use of, in attempting the dissipation of an opaque lens, are drops composed of equal parts of æther and tinct. nicotianæ, to be applied night and morning. Twenty minutes, or half an hour, after using the drops, I direct the size of a small pea of the following ointment to be inserted between the lids: ℞ sacchari purificat ʒ i. sal muriatic ʒ ii. butyr. recent ʒ iss. Saccharum & salem muriaticum in pulverem tere dein cum butyro misce.

When, unfortunately, a paralysis of the optic nerve succeeds an Opthalmy, the probability of the recovery of the sight is small. As the complaint arose from an increased excitement, all kind of stimulant applications to the eye would, for some time at least, be evidently improper. Any afsistance that may be expected to be gained by medicines, must be to add vigour to the system, by a generous diet, exercise, preparations of steel, bark, and other tonics. A perpetual blister, or a seton in the neck, would accord with the intentions of cure, and might be servicable.*

* Having omitted, in its proper place, to take notice of a troublesome complaint, which repeated attacks of inflammation often produce, I beg leave to insert it in a note. The complaint I allude to, is an inflammation, excoriation, and rawnefs of the edges of the lids. The eye generally waters, the lids feel unpleasantly hot, and, in a morning, they are so firmly closed, by a thick adhesive matter, as not to be separated without much difficulty, and frequently with a discharge of blood. This adhesive matter seems to be secreted by small glands, situated near the root of each eye-lash, which become ulcerated, and throw out the matter, which thickens by being in contact with the air, and adheres to the

CASE I.

Inflammation of the Eye cured by warm Water.

Mary Spilsbury, Allen's-court, Cherry-street, 60 years of age, of a strong constitution, on the afternoon of the 22d August,

lids. In removing the adhesive matter, some of the eye-lashes frequently come off. Matter is again quickly secreted from the ulcerated part, and the scab is again formed: till in time, by the alternate removal and renewal of the scabs, the whole of the eye-lashes are removed, and the edges of the lids become callous, and often everted.

In recent and slight cases, the eye should be bathed with hot water three or four times a day, any adhesive matter that adheres to the lids carefully removed with the water, and the lids kept *constantly* moist, with an ointment prepared with half an ounce of hog's lard, and half a dram of calcined zinc, which will be found to cause a favourable change in a very short time.

When the complaint is more severe, other more powerful means must be had recourse to; and among the first, and almost alone, in the general opinion, stands the ung. hydrargyri. nitrati. It has, of late, been very generally used, and, where it is carefully and properly applied, it is almost uniformly attended with advantage. Though I deny not the excellency of the unguentum hydrargyri. nitrati. yet I seldom make use of it. The ointment is yellow, and excessively hard. The yellowness is imparted to the skin, which cannot be removed for a day or two, which forms a

1801, consulted me for a complaint in her left eye. She told me, she had occasonally had weak eyes, and had formerly a speck in the eye that was now affected; that it had been slightly inflamed for a fortnight, but that for twenty-four hours before she saw me, she had been in dreadful torture from the pain of the eye and head. On examining the eye, which was greatly

formidable objection to its use to a certain class of patients; but my objection is to its hardness, by which it is rendered difficult to apply to the very edge of the lids. It may be warmed, but it becomes solid before it can be rubbed upon the lids. I have seen many, labouring under this complaint, who were using the ointment without any amendment: I saw it was not applied to the seat of the complaint, and urged them to a more careful application of it; but they complained of the hardness of the ointment, and the tenderness of the lids: remonstrances were in vain. To remove these objections, which in many cases were insurmountable, I prepared the following ointment, which has scarcely ever disappointed me:

℞ Adipis suillæ drachmas tres cum semisse.
Ceræ albæ drachmam dimidiam.
Pulveris hydrargyri nitrati rubri granas quinque, & viginti.
Misce fiat unguentum.

pained by the admiſsion of the neceſsary degree of light, I found the conjunctiva very red, and of a highly vascular appearance, with three small opaque spots on the cornea. I judged this a fair case for making trial of warm water alone. To induce her to be more accurate in the application, I gave her some aq. fontan. coloured with a few drops of tinct. aloes, and ordered her to mix a tea ſpoonful of it with a glaſsful of

' The greatest attention should be paid to remove every particle of matter from the edge of the lids; and in bad cases, previous to the use of the ointment, the matter frequently adheres so firmly to them as to require them to be bathed for nearly an hour with hot water before it can be wholly separated. As soon as it is removed, the above ointment should be applied with a camel hair brush upon all those parts which appear ulcerated and excoriated. On the application of the ointment, the heat of the skin melts it, by which means the ointment is applied with facility to any part that may be desired. Too much ointment should not be applied at one time, for if it runs from the lids into the eye it will cause considerable irritation. A small quantity had better be applied every three or four hours. This ointment is only intended for violent cases; for, in most instances, the ointment, with the calcined zinc. will effect a cure, in a far more pleasant manner, and with very little pain. It may also be applied to the eye without any injury.

water as hot as the eye could bear, and to put the eye into it for three or four minutes, repeating it every three hours, or oftener, if the pain should continue violent.

August 23.—On next morning, she said the eye was easier. She did not appear in so much pain, and could bear the light better. She assured me she had punctually followed my directions, and that after bathing the eye it was *cooler* and *easier*.

24.—She has had a comfortable night, and the eye is very much better. The pain is nearly gone, and she bears the light with great ease.

26.—The inflammation has subsided so much as to cause little inconvenience, and give no pain though it continues weak. The specks are much diminished.

CASE II.

Inflammation of the Eye cured by hot Water and Tincture of Tobacco.

Mrs. Purslow, No. 24, Bread-street, about 30 years of age, applied to me, August 23, 1801, on account of a violent

inflammation in the left eye; the other was lost by an inflammation, which had discharged the whole of the humours, when an infant. She had been bad for more than a fortnight; could not bear the light, and had suffered much from pain in the head. On examining the eye I found it highly inflamed: there was also an opaque spot on the cornea towards the nose, about the eighth of an inch in diameter. The lids likewise were a good deal inflamed and excoriated on the edges.

I ordered her, as in Spilsbury's case, and for the same reason, a little water coloured with tinct. aloes, a tea spoonful mixed with a wine glaſs full of hot water to be applied to the eye every three hours, the tincture of tobacco to be rubbed upon the head three times a day, and as often as the pain was violent, and a little mild ointment to be anointed upon the edge of the lids night and morning.

When I mentioned to her the application of the hot water, she immediately replied

that cold applications made the eye more painful, but that hot ones gave eafe.

In two days I saw her: the eye was infinitely better in every respect. The inflammation had much subsided; she could bear the light with ease, and the pain, except once or twice a day, was trifling. The hot immersion, she said, seemed to cool and ease the eye after every time of making use of it, and that the tincture relieved the pain in the head.

August 28, I saw her again: the inflammation was gone, though the eye remained rather weak, and the speck upon the cornea had disappeared more than one half. She had continued the application, she said, as I had directed, three or four times a day, and that the eye looked as well and was as easy yesterday as to day.

CASE III.

An Opthalmy treated with diluted Alcohol, with Camphor, and Tincture of Tobacco.

July 8, 1801, Mrs. Merry, of Tardebig, near Redditch, about 25 years of age, after

having had the feet wet, was attacked with a violent inflammation of the eye, with great pain. I saw her four days after the attack; there was a copious discharge of tears mixed with a thick matter; the conjunctiva was very red and much thickened, so that the cornea appeared depreſsed and surrounded with a red fleshy wall. She had been using a lotion given her by a neighbour, without any advantage.

I ordered her a lotion in which ʒii. spirit. camph. in the proportion of ʒii. ad lb. i. spirit, were mixed with aq. fontan. ℥iv. to be used three times a day as I have before directed, when speaking of the application of diluted alcohol and some tincture of tobacco to be rubbed upon the temple to relieve the pain. The next day she was easier both in the eye and the head, and continued daily getting better. In a week, the inflammation was no inconvenience to her.

CASE IV.

A violent Opthalmy, with deposition of pus, cured with Diluted Alcohol with Camphor, and Tincture of Tobacco.

Mrs. C. Spiceal-street, Birmingham, about 30 years of age, of rather a delicate constitution, sent to me May 23, 1801. She says she has had an inflammation in her left eye for nearly a month, which has given her a great deal of pain, especially on exposing the eye to the light; but that for the two last days the pain in the eye and head has been particularly severe; she had been using a variety of applications without any amendment. She cannot attribute her complaint to any particular cause, and has never had them affected before. She was sitting in a room much darkened. On inspecting the eye I found it highly inflamed; acroſs and over the centre of the cornea, rather obliquely, was a speck or opacity which obscured half the pupil, and in the lower part of the anterior chamber some pus was deposited (forming

the onyx) which occupied a space of about a quarter of an inch from the inferior part where the cornea is joined to the sclerotica.

Considering the violence of the inflammation, the largeneſs of the opacity, but above all the deposition of pus in the anterior chamber, I knew that if the eye did not almost immediately get better, there would be little hopes of saving it, my prognosis therefore was doubtful. I desired she would have dropt into the eye for 7 or 8 minutes, four times a day, a lotion of spirit. camph. ʒii. to aq. font. ℥iv. as in the last case, and to apply the tinct. nicotian. to the forehead and temple thrice a day, and whenever the pain was violent. As she complained of costiveneſs, I ordered an infusion of senna with salts.

May 24.—The applications immediately relieved the pain, she has had a good night; the eye, she thinks, can bear the light better. The inflammation appears as yesterday, but the deposition of matter is evidently leſs.

26.—Every symptom is abated. The eye can endure the light much better; the pain is very moderate; the redneſs of the conjunctiva much abated, and the deposition of matter merely visible.

30.—The eye is not much inflamed; the light causes no pain, and she has an indistinct vision. There was a muddineſs over the whole cornea which has now disappeared, and the speck is not more than half the size, it was when I first saw it, which is now only seven days. The eye is easy in the day, but a few hours after going to bed, she has been awakened, these two last nights, with a shooting pain in the eye and head. She complains also of a giddineſs and swimming in the head. I desired the tincture of tobacco to be discontinued, but to go on with the lotion, to which, two days before, I had added half a drachm more of spirit; an opening draught to be taken to-morrow morning, and the bitter infusion with six drops of tinct. opii, three times a day.

June 5.—The pain and inflammation of the eye is entirely gone, and the giddineſs is scarcely perceived. I sent her, for the speck, a mild ointment, in two drachms of which were mixed, finely powdered, Sal. Muriatic. & Sacch. purific. a. a. ℈ii. to be applied every night. The speck was shortly so much removed as to enable her to read with ease.

CASE V.

An Inflammation of the Eye treated with diluted Alcohol and Tinct. Tobacco.

Mr. Crowder, Birmingham, 40 years of age, sent for me, April 19th. About 9 days before that period, in consequence of exposing himself to a cool night air, he was attacked with a violent inflammation in his eyes, attended with great pain in his forehead and temple. He had also an adhesive discharge from his eyes which adhered to the lids, and from its acrimony made them look red or rather gave them an appearance of *rawneſs*. Light caused exquisite pain.

He had made use of several trifling applications, which his friends had recom-

mended. Being a strong robust man and having a good deal of thirst and fever, from the violence of the pain, I ordered him to take an ounce of salts immediately. To apply to his eyes, I directed a lotion composed of ℥v. sp. vin. rect. to ℥viii. of water, to be dropt into the eyes for six or seven minutes, every four hours; I requested him to rub the tincture of tobacco on the temple three times a day, and as often as the pain returned. He had also a mild ointment to anoint the edge of the lids with, to prevent them from adhering at night.

April 21.—I did not see him yesterday being obliged to be out of town, but to day the eyes are evidently better. He complains of the lotion giving him great pain for some time after using it. On enquiring how he had applied it, he informs me he has dropt a few drops in the eye and when the smarting has rather subsided a few more were put in, repeating it perhaps twice in a minute. On hearing this I immediately

drest the eye, as I have before described, which was followed with ease, and none of the irritation he had before experienced: I requested it might be repeated four times a day. The application of the tincture, he says, has almost constantly removed the pain of his head. As he is still feverish the salts are to be repeated.

23.—The eyes are much better, they do not water so much, the redneſs has a good deal subsided, and the pain does not return so frequent, neither is it so violent. On the 26th, a week from my first seeing him, the eyes were so much better, that he told me he should attend to his busineſs at the shop the next day, which he actually did. He superintends a bayonet manufactory: from looking at the fires, and the red hot iron, with, probably, going from the hot work shop into the cool air, brought on a slight return of the complaint, which was speedily abated by the means first adopted, and, in rather more than another week, he was cured.

CASE VI.

An Opthalmy, with great Pain of the Eye and Head, immediately removed by Means of diluted camphorated Spirit, and the Tincture of Tobacco.

In July, 1798, Mr. D. having contracted a gonorrhœa when in a state of intoxication, was attacked two days afterwards with a violent Opthalmy in the left eye, attended with great pain, an intolerance of light, and a profuse discharge of thick matter, which had the appearance of the matter discharged from the urethra, in gonorrhœa virulenta*. The surgeon who attended him said, it was a venereal affection of the eye. He exhibited mercury internally, had leeches put to his temple, and applied

* There are many cases which prove that recent syphilitic, or gonorhœal virus, from another person, applied to the eye, will produce a very dreadful disease, and that the discharge from chancres, or from the urethra, being changed in its nature, from remaining long in contact with the body, may induce a violent inflammation in the person's own eye, on being applied to that part. I have not sufficient data to venture a conjecture in which way it acted in this case, but he told me it appeared to have no effect on the discharge.

different kinds of lotions to his eye, as well as poultices to the lids. About three weeks after the commencement of the symptoms, I saw him, the globe of the eye was enlarged to the size of a hen's egg, the lids were very much tumefied, ulceration had taken place in different parts of the cornea, and there was a profuse discharge of thick matter from the eye. I ordered the eye to be bathed, every two or three hours, with water, in four ounces of which was dissolved one scruple of sulphate of zinc, and ʒi. of the weak camphorated spirit. As he complained of pain in the temple, I desired him to rub the tincture of tobacco on that part three or four times a day. In a few days the eye became easier, and the discharge abated. In three weeks the lids were of the natural size, and the tunica conjunctiva had nearly recovered its natural colour, but the cornea was enlarged, and projected so much that the lids could not cover it. To prevent the deformity, and remove the constant irritation which the

increased bulk of the eye produced, I advised him to permit me to divide the cornea, and to evacuate so much of the contents of the eye as would reduce it to its natural size. He consented to my request. In a week the wound in the cornea was healed, and the diseased eye was nearly the same size as the sound one, though somewhat smaller. The anterior part of the cornea was not uniformly opaque and white, as is often the case, but irregularly so, and towards the nose two small black spots were to be seen, in which place the substance of the cornea was so thin as to be transparent. I have proceeded so far in describing this case, that the state of the eye may be properly understood, and the nature of it more clearly ascertained.

The section of the cornea was made October, 1798. On the 31st of March following, the gentleman's brother came to Birmingham, a distance of twenty miles, to inform me that, at five o'clock in the morning, Mr. D. had been seized with a

most violent and excruciating pain in the ball of his eye, which appeared to him as if it were going to burst, and requested I would immediately go over to endeavour to mitigate his sufferings.

I arrived at his house at six in the evening, when I found him walking about the room in great agony. He told me the pain in the eye and head had been incessant the whole day. His skin felt hot and dry, and the pulse was strong and quick. The conjunctiva was very red, and the small black spots were enlarged, having the appearance of small blisters, which I concluded would break in a few hours if the pain did not abate. I immediately dropt into his eye, in the manner I have before directed, for nearly a quarter of an hour, a lotion consisting of two drachms of camphorated spirit, in four ounces of water. The pain from the lotion soon began to subside; the bathing was continued till a farther application caused little or no pain, but a hot burning sensation. A few minutes after discon-

tinuing the application my patient said the eye felt easier than it had done for hours.

I then rubbed a drachm of the tincture of tobacco on the temple and forehead, when he expreſsed his satisfaction at feeling more comfortable than he had done the whole day. He conversed chearfully the whole evening, though, before the applications, he was continually walking about the room, and moving his head in different directions, from the violence of the pain.

I applied the lotion and tincture again at bed time, after which he had a comfortable night. In the morning he was free from pain, the blisters of the cornea were leſs and the inflammation diminished. In a few days it subsided, by continuing the same means.

CASE VII.

A long continued Inflammation of the Eye and Eruption of the Face cured by diluted Alcohol and warm Water.

Miſs M. F. aged 21, of a brown complexion and scorbutic habit; having no inclination to activity, and extremities

generally cold, came to Birmingham for my advice for a complaint in her eyes, December 15, 1800. I found the eyes a good deal inflamed, with occasionally great pain in them, as well as the temples. The light did not give much pain, though they watered profusely. The edge of the lids was red, but the glandulæ meibomii did not appear to be affected, as the eye lashes were complete. The eyes looked constantly full of water, as if a tear were on the point of running over the lid; there was no opacity of the cornea, and she could see for half a minute tolerably well, if she tried longer it brought on a pain in both the eye and head. The face, too, was in a dreadful condition, being covered with a thick brown scab, beginning on the middle of the cheek, or rather nearer to the temple, on each side, and meeting on the ridge of the nose, on which part it was not quite so thick, forming a small groove.

The scab extended below as far as the upper lip, and upwards to the eye-lids, almost to their ciliary edge.

She informed me she attributed her complaint to grief for the loss of her mother, and that she had been in that unpleasant situation for more than *five months*, during the whole of which time the eyes had not been free from the inflammation, or the face from the scabs. She had, however, repeatedly conceived, from an amendment taking place, for a few days, in all her complaints, that she was rapidly getting well, when, without any apparent cause, the eyes would be attacked with violent pain, which would extend to the head, and, in a few hours, she would be as bad as before.

The scabs, also, on the face, would, at times, scale off without being succeeded by fresh ones, the face feeling cool and pleasant, which gave her the consoling hope, that the unsightly appearance would be shortly removed. This hope, however, would shortly vanish; for, without being able to account for the change, the face would burn and itch in the most dreadful

manner, continuing to do so for hours, till at length a scab would be formed, perhaps in twelve hours, the size of a crown piece.

On the coming on of the burning and itching, the face looked red and felt hot to the hand, shortly after a slight moisture was seen on the skin, which continued to increase and become thick, till a scab was formed.

The increased action of the veſsels seemed to overcome the resistance of the capillaries, which allowed a small portion of their transparent contents to escape; the thinner parts of which being shortly exhaled, the thicker or the coagulable lymph remained, and formed the scab. This fact was peculiarly visible; for if the pain and burning were confined to a part of the face that had been free from scabs for several days, two or three hours would be required to produce any appearance of scab; but where the scab had been *shortly* removed, almost immediately on the diseased action

coming on, the transudation could be perceived.

The *same* scabs never remained long on the face; they became moist, and loose at the bottom, peeled off, and were succeeded by fresh ones. This never took place unleſs with the increased action attended with the burning and itching, which were generally experienced once or twice a day.

Both for the eyes and face she had made trial of an endleſs variety of external and internal medicines, which were exhibited by the advice of her apothecary, during the long five months of her sufferings. I desired she would bathe her face twice a day with warm milk and water for ten or fifteen minutes, and *as much* oftener as the itching and pain returned. To the eye I directed a lotion, consisting of sp. vin. rectificat ʒ iſs. to aq. fontan. ℥ iv. to be dropt into the eye for six or eight minutes three times a day. A little mild ointment was also to be anointed upon the lids at bed time.

Although I depended, in the treatment of this lady, more particularly on external applications, yet as there was an evident deficiency of the irritable principle, with great susceptibility to exciting causes, I prescribed, with a generous diet and exercise, the following formula: ℞ pulv. gum. myrrh. ʒi. mucil. gum. arab. ℥ſs. zinc, vitriol. gr. vi. aq. menth. piperit aq. fontan. ā ā ℥iv. capiat cochl. larg. ii. ter indies.

On the next day, Dec. 16, the eyes were rather leſs inflamed. She ſays they were easy very shortly after the dreſsing, but that, in general, whatever has been applied to her eyes has caused a smarting and pain for hours, and, as she termed it, did not seem to agree with them. I dropt two drops of the tinct. opii mit. into the eyes: it did not seem to give more pain than usual on its first application, but instead of subsiding in a few minutes, as is usual, it continued to irritate the eyes for several hours; and, indeed, seemed to unpleasantly affect the eye the whole day. On the fol-

lowing day I also made trial of it, with the same want of succefs. I tried it again at another time, with the same bad effect. I also dropt into the eye the thebaic tincture, recommended by Mr. Ware, with the same unpleasant sensations. These applications so *entirely* failing, seemed to me the more surprising, as the inflammation was not violent, nor the pain of the head acute; but scorbutic cases are sometimes met with, so extremely susceptible of stimuli, as to render the treatment of them particularly difficult.

Dec. 28.—The warm milk and water has been duly applied. The burning heat has very often returned, but the warm bathing has *always moderated* and generally removed the pain. The scabs are nearly gone, though the face looks very tender. I ordered the face to be bathed several times daily, with a solution of sulphate of zinc, (gr. xl. ad aq. font. ℥ viii.) and warm water to be applied to the face every morning, and as often as the pain and itching returned. The eyes improved very much

the first three or four days: they are now nearly stationary. I desired the diluted alcohol to be continued, with the addition of zinc, vitriol. gr. v. ad. aq. font. ℥iv. The myrrh was discontinued, and decoctum cinchonæ substituted in its place.

Jan. 11.—The face is well, at least it is entirely free from scabs, though the burning and itching is at times experienced, which warm water relieves. The lotion is discontinued, but the warm water is applied every morning. The eyes are very little inflamed, and give no pain, but have a weak tender look. The lotion is continued twice a day. Instead of the bark, twenty drops of strong nitric acid, in sugar and water, were to be taken three times a day. She now went to a relation's three or four miles from Birmingham, and I did not see her till Feb. 9th.

The face continues well, although the heat and pain returns, and frequently alarms her. The eyes are free from pain, and she can now see very well, though they

still look weak. I advised a continuance of the warm water, and the occasional use of the lotion. She returns home tomorrow.

March 10.—Miſs F. writes to me the eyes are inflamed and painful, and that the face is become so troublesome she fears will be shortly as bad as ever. I recommended the liberal use of the lotion, with the application, on the coming on of the heat and burning, of water *as hot as could be borne*.

March 23.—She now writes me the eyes are very much better, and that the hot water had been of singular service to her face, which was quite well.

In August I saw her. She continued very well, and had had no relapse.

It is worthy of remark in this case, that, after the lady had been in the greatest distreſs for five months, and had gone through the usual routine of bleeding, blisters, cathartics, and a great variety of medicines, she was, in a fortnight, nearly cured, almost solely, by the use of warm

water, and spirit and water, and quite so in rather more than three weeks. As a proof of their efficacy, although she was threatened with many returns of the diseased action, the same remedies always relieved.

CASE VIII.

A most violent Opthalmy cured by Alcohol and Water.

J. W. when he came for my aſsistance, Aug. 24, 1801, was in such a dreadful state as to be scarcely able to discern light from darkneſs. The conjunctivæ had the appearance of pieces of raw flesh, and were so much enlarged the lids could not cover them. He could not move the eyes without a good deal of pain; the corneâ appeared depreſsed, and were so obscured and opaque that the state of the interior of the eyes could not be at all discovered. There appeared also a whitish fibrous substance on the superior part of the cornea, which induced me to believe they were ruptured. The account he gave me was, that, about three weeks ago, he was attacked with

inflammation and pain in both his eyes, which came on gradually, and proceeding, as he thought, from a cold, and that he had been blind more than a week.

There appeared something peculiarly violent in the cause of the disease, which was unlike the common Opthalmy, and as he seemed healthy in other respects, I asked him if he had had a gonorrhœa lately. He said he had not, but, on my repeating the question, he confeſsed he had a slight one about a month since, which was not then cured. It will be recollected, that, in the preceding part of this Treatise, I have ventured to aſsert, that the gonorrhœa virulenta is never translated from the penis to the eye, or conveyed there by the patient's *own* secretion, though I did not deny the probability of a violent disease being caused by gonorrhœal mattter, from another person, or acrid matter of any kind.

From these considerations I was induced to make particular enquiries into his complaint. I was informed the gonorrhœa

had not been violent, neither attended with much pain in micturition, or violent chordees, that the discharge had not been copious, or had ever ceased, that the inflammation of the eyes came on four or five days after the appearance of the gonorrhœa, but was neither sudden or violent, and that it was three days before it gave him much pain. From his account, too, though the eyes did discharge a kind of matter, it had not been more copious than happens in a violent opthalmy, and was unlike gonorrhœal matter. The physician and surgeon that attended him did not mention the probability of any connection between the two diseases, though, from the violence of the disease, and the singular appearance of the eye, I suspected the cause to be no common one. The question then naturally arose, of what that cause could be? It was not from a metastasis of the gonorrhœa, for the discharge had never ceased; nor was it probable to be from the infected matter from the woman, as it did not

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had not been violent, neither attended with much pain in micturition, or violent chordees, that the discharge had not been copious, or had ever ceased, that the inflammation of the eyes came on four or five days after the appearance of the gonorrhoea, but was neither sudden or violent, and that it was three days before it gave him much pain. From his account, too, though the eyes did discharge a kind of matter, it had not been more copious than happens in a violent opthalmy, and was unlike gonorrhoeal matter. The physician and surgeon that attended him did not mention the probability of any connection between the two diseases, though, from the violence of the disease, and the singular appearance of the eye, I suspected the cause to be no common one. The question then naturally arose, of what that cause could be? It was not from a metastasis of the gonorrhoea, for the discharge had never ceased; nor was it probable to be from the infected matter from the woman, as it did not

appear till several days after the connection, and I believed it impoſsible to be produced by *recent* gonorrhœal matter secreted from the patient's own person. Bewildered in conjectures, I examined the penis, when I found the præputium was so long, and withal so tight, that, though there was not the least inflammation or swelling, it was with some difficulty he could retract the skin. The glans was suffused with an offensive matter, which seemed to have acquired its unpleasant smell from its long confinement. I immediately concluded, that since the matter must have been removed with difficulty, it was done but seldom, and that, from its confinement, must become putrid and acrid, and that it was probable some of this acrid matter was applied to the eye, and produced the Opthalmy. The gentleman had made use of many applications to his eyes, also leeches to his temples, and blisters, none of which seemed to be of the least service, as the eyes became daily worse.

As the eyes were in so perilous a situation, I requested him to remain in Birmingham a few days, that I might not only see them frequently, but drefs them myself; for I conceived if they were not treated with all imaginable tendernefs, they would certainly be lost. I applied to his eyes a lotion of two drams of rectified spirit of wine to four ounces of water, in the manner I have before directed. It was dropt in for five or six minutes four times a day. He had also a little mild ointment to be rubbed upon the edge of the lids at bed time.

August 25.—He has not had much sleep, which he attributes to lying in a strange bed, as the eyes have been easier.

As he says he can bear the lotion stronger, I shall add half a drachm more of spirit of wine.

26.—The conjunctiva of each eye is this morning evidently lefs swelled, and I can see that the cornea of each eye has given way. There is a small substance, resembling a bit of membrane, hanging

from each orifice. The pain is less, and he can move the eyes and lids better.

27.—The eyes continue mending. The wound in the cornea of the right eye is healed, the lower part of it is clearer, and I can very faintly see part of the pupil. He can obscurely see his hand move when placed between the right eye and the window. I have added another half drachm of spirit to the lotion, making it now ʒiii. to ʒiv. water.

28.—The size of the conjunctiva in each eye continues to decrease, and he says, to day, he can see as well with the left eye, as with the right. On inspecting the left eye, I found the cornea much clearer, but quite flat, and from the watering of the eye, I concluded the aqueous humour was discharged through the wound, as fast as it was secreted.

29 and 30.—The eyes daily improve.

31.—The eyes are much better, and to day, as he is anxious to be with his friends, he returns home. The swelling of the

conjunctivæ is not quite gone, but he can open and move his eyes with perfect ease. The cornea of the right eye appears clearer than it did, but is smaller than natural and more convex. The left eye is still flat, yet is raised a little more than it was. The substance on the upper part is no longer visible. He can see no object with either eye at all distinct. The pain is very moderate, except once or twice a day, for a few minutes. I now added another half drachm to the lotion, making, in the whole, ʒ iiiſs. to ℥ iv. of water, and desired it might be dropt into the eye three times a day, continuing the ointment at night.

September 9.—His head and eyes were now quite free from pain; and the conjunctivæ were once more of their natural size, and nearly of their natural appearance. The cornea of each eye appeared nearly restored to its usual size, but there were several specks or opaque spots on each, and no part of them were completely transparent. He could count his fingers with either eye,

but could not discover the form or colour of objects. I have seen him once since, and I find the specks are rapidly removing, and the sight daily improves by the means laid down for the cure of specks, but as there is still a great deal to be done towards restoring the eyes, as much as they will be, I shall not extend this case by entering into particulars, especially since my purpose is answered in shewing *how immediately* the diseased action was changed by the application of spirit and water.

APPENDIX.

HAVING promised to inquire into the powers and efficacy of those medicines and means which have generally been had recourse to in disorders of the eyes, I am now about to perform the task, but as I have already extended this work to a greater length than I expected, I shall be more concise in this part than I at first intended.

BLEEDING.

The propriety of taking away a certain quantity of blood, is universally insisted upon by medical writers, as a necefsary part of the cure in an inflammation of the eye, though there has been some difference of opinion respecting the part from which it ought to be taken. Bleeding is practised with the intention either of taking away a portion of

blood from the whole system, or from the vicinity of the part affected, or from the part itself.

The ancient physicians insisted much on large general bleedings. Galen recommends, on the first attack of an Opthalmy, *three pounds* of blood to be taken from the arm, and another pound in an hour afterwards, which, he says, will remove the disease in a few hours. It is now employed only when the action of the whole arterial system is affected, or when the habit of the patient is plethoric, when one or two moderate bleedings from the arm may be serviceable.

If blood can be taken from any veſsel near the eye, so as to leſsen the quantity sent to the part in a given time, the stimulus in that part will, no doubt, be diminished, and the action in consequence abated. This may be accomplished either by directly cutting off a certain portion of the supply, as by dividing an artery or arteries, or by substracting blood by

opening a vein, which by removing part of the resistance from the capillary extremities of the arteries, would lefsen the momentum of the blood, and the force of the contractions of the vefsels.

Notwithstanding what has been just observed, I have frequently found little advantage derived from taking blood from the vicinity of the part affected, and, having other means in my power, more pleasant and more beneficial, I *very seldom* put it in practice. As there are many, however, who are partial to that mode of bleeding, I shall make a few observations upon each particular method.

Opening the temporal artery is generally supposed to be a mode of bleeding the most effectual, and the most speedy in relieving the inflammation. It would be particularly desirable to take blood from this artery, considering its proximity to the part affected, were there not some objections which are sufficient to overbalance any promised advantages which might otherwise

be received. It often happens that the artery will not yield a sufficiency of blood from the divided ends retracting; and, again, sometimes after the operation has been performed for many hours, troublesome, and even dangerous hemorrhages take place. To obviate these inconveniences it has been proposed, after making an incision through the skin, and laying the artery bare, to make a puncture into it with the point of a lancet, and when as much blood has been taken away as desired, to completely divide it, and, by a large compreſs and bandage, to prevent any fear of subsequent hemorrhage. In that way, it is probable as much blood may be obtained as required, yet, with every care, the artery will sometimes bleed again. Besides, in the usual way of applying a bandage to the whole head, from the circulation being impeded on the external part, the irritation from the current of blood will be increased in the parts in the vicinity of the preſsure, an extra quantity

will be carried to the eye; so that unleſs the inflammation is violent in the extreme, the division of the temporal artery is *very seldom* had recourse to, either because the trouble and danger has not been thought equal to the expected benefit, or because it is supposed a quantity of leeches applied to the temple will be of the same advantage without any of the ill consequences.

The external jugular vein has been sometimes opened in this complaint. But it is not frequently done, because this vein receiving blood from all the external parts of the head, as well as from the eye, it does not so immediately affect the circulation in that organ as other means which are put in practice.

In some people the *angular vein* is large and visible immediately under the skin, when I have at times opened it, and making a preſsure with my finger below the orifice, have obtained a considerable quantity of blood. It cannot, however, be a general practice, as the vein is often so

small and lies so much beneath the surface, that the difficulty of puncturing it would be great, and the improbability of gaining much blood still greater.

There is no mode of bleeding, in Opthalmy, more common, or which appears to be attended with more succefs than the application of *leeches* to the vicinity of the eye.* There is some difference of opinion respecting the best place for fixing them. In a theoretical point of view it has been thought the nearer they could be placed to the part affected the greater would be the benefit: on that account they have been fixed on the lower lid, or very near the corners of the eye, and sometimes even upon the *upper lid*; but such practice is highly reprehensible, as from the loosenefs of the cellular membrane, a considerable

* Upon the exploded idea of derivation and revulsion, I have repeatedly known leeches applied to the top of the foot, or one of the veins opened with a lancet, but with how much advantage, except as taking away a certain quantity of blood from the general system, I need not, I presume, mention.

swelling of the lids will arise, with occasionally some extravasation, which, by increasing the irritation of the eye, will add much to the inflammation. When it is thought proper to apply leeches they should be put in the hollow of the temple, as close to the hair and as near together as poſsible. I am inclined to believe *leeches* are of service, not solely from substracting so much blood from the veſsels which convey it to the inflamed part, but also by the stimulus which is produced by the small wounds they make, which excites inflammation in a greater or leſs degree, and produces a counter irritation. Hence, a *blister*, not larger than a *six-pence*, being applied over the orifices, as soon as the discharge of blood subsides, adds much to the good effect of the leeches.

On the first view of the subject, it would appear that of the different methods of taking away blood, that of bleeding the eye itself would be the most effectual. In truth, *topical bleeding* has been so strongly

recommended by many practitioners, and its advantages so forcibly insisted on, that I confess I was, at one time, partial to the method, and it was not till after a good deal of experience of its frequently increasing the complaint, I was induced to lay it aside. I have already mentioned several cases in which a division of the vessels of the conjunctiva or of the cornea may be proper, but in an Opthalmy, with much pain and intollerance of light, I am *decidedly of opinion*, that scarifying the anterior part of the conjunctiva is injurious. In some few cases in which the vessels on the inside of the lower lid are turgid, I have everted it, and by dividing them with a lancet, have evacuated from 10 to 20 drops of blood with advantage, but those cases in which it is admissible are rare.

The stimulus that is occasioned by the separation of the lids, the pain that follows the exposure of the eye to the necessary degree of light for the operation, with the increased stimulus produced by the small

incisions which are made in the conjunctiva, are the principal reasons for its failure. If we consider, too, that frequently not more than *one drop* of blood can be obtained, it will not be surprising that little benefit is received.

Since, however, some practitioners are partial to topical bleeding of the eye, it may be necefsary to enquire by what means it may be best performed.

Timidity has so far overcome the judgment of some men, as to induce them to recommend the conjunctiva to be rubbed with a *pumice* stone till the blood came, or to draw *beards of barley* acrofs the vefsels to tear them: to speak of these methods in the most favourable manner, is to say they must be totally uselefs. Others have introduced the common stitching needle under the turgid vefsels, which they have pushed on till the upper edge has divided them, or else, by *snatching* the needle away with a *slight jerk*, have torn them asunder, and by their violence have much increased

the inflammation. There are two other methods of taking blood from the eye, which are commonly put in practice. One is to insert a small hook under one or two of the enlarged veſsels, and raising them, to *cut away* a *portion* of them with a small pair of curved sciſsors; by which, it is said, a greater discharge of blood is procured, with a certainty of the destruction of the veſsels. The operation is repeated till as many of the veſsels are divided as are thought requisite. The other is to divide the most turgid veſsels with the edge of a lancet; the manner of doing which I have already described in speaking of the division of red veſsels in the cornea. Each of these methods have their advocates, but, as far as my experience goes, they ought not to be put in competition. I have never thought proper to attempt drawing blood with the hook and sciſsors, where there has been *much irritability* of the eye; and when I have done it, the inflammation was always *much* increased. My want of suc-

cefs I have attributed to the force made use of to separate the lids, the length of time they were required to be kept asunder, and the irritation produced by the insertion of the hook, with the sudden and sometimes violent motion of the eye, before the scifsors could be introduced. Although the same injury is far from being done to the eye by dividing the vefsels with a lancet, yet I am obliged to confefs that, when the eye is irritable with intolerance of light, I have never known it abate the inflammation, and in many instances, in which the largenefs of the vefsels, and the ease with which they were divided, would lead one to expect great benefit from the operation, I have been often totally disappointed. On these accounts I have, for several years, discontinued scarifying the conjunctiva, unlefs in a few cases, as I have beforementioned, when the vefsels on that part of it which lines the inside of the lids, are very conspicuous.

BLISTERS

Have been so generally recommended, and as generally used in inflammations of the eye, that I feel a considerable degree of hesitation in bringing forward an opinion that militates against the common practice, and I have only to afsert in my vindication, that it is an opinion I have not hastily taken up, but which has been grounded upon experience. I have repeatedly found that blisters, in the first attack or commencement of an Opthalmy,* have been of no advantage, but frequently

* Perhaps I should be more correct, if, instead of saying the first attack, or commencement of an Opthalmy, I had said, when the pain was great, and the action of the vefsels violent. I have mentioned the first attack, &c. because at that time the action of the vefsels is generally the greateft. But when I say such a thing is proper, or the contrary, on the first attack of an inflammation, I wish it to be understood that I mean it is so, whenever the action of the vefsels is great, whether it is a fortnight or a month since the first attack, and sometimes it happens that the action of the vefsels is much greater several weeks after the commencement of the inflammation, than at the beginning.

have clearly done an injury, from adding to the irritation of the system. If at that period they are applied, they ought never, on the temple, to be larger than a sixpence, nor when placed behind the ear to exceed the size of a shilling, or to the nape of the neck of half a crown. But when the complaint has been of the duration of several weeks, I have repeatedly known a decided advantage received from the application of a blister to the nape of the neck of the usual size, repeating it every four or five days, or keeping it discharging for nine days by blistering ointment, then healing it and applying another. I recollect several instances which have yielded to that method, after a trial of a variety of other means, to no purpose. That the cure was justly attributed to the blister, appears from this, that if the blister was not applied at the usual time, the disorder became worse, or at least did not yield as it had done for some few days before. This treatment I have found succefsful in

complaints of long duration, whether attended with an opacity of the cornea or not. Blisters seem to owe a good deal of their sanative effect to the counter irritation they produce.

SETONS and ISSUES.

The same observations that were made on blisters are nearly applicable to them, but neither, I believe, are usually had recourse to at the commencement of an Opthalmy. As they are not so powerful, or speedy in their effects, I generally give the preference to blisters. Besides, some of the good effects of a blister are owing to its frequent renewal, which is inadmifsible in either setons or ifsues. When the inflammation, however, is very moderate, with a discharge of tears, and frequently an excoriation of the lids, which return upon exposure to slight irregularities in the atmosphere, a seton in the neck, or an ifsue in the arm, has often appeared to diminish the frequent recurrence of the complaint.

CAMPHOR.

For some centuries scarcely a lotion for the eye or an ointment has been prepared without a portion of camphor in its composition. How it first obtained its celebrity, or why it has still retained it, I have not been able to discover. Dr. Cullen, with whom camphor was a favourite medicine, says, "I have no doubt that the ANTIPHLOGISTIC nature of camphor may be of use in curing Opthalmia; and this gives a good ground for the many attempts that have been made to introduce camphor into the medicines intended to be employed externally in the cure of Opthalmia." This appears to be a mere suggestion of the Doctor's, and taken up without enquiry, and would have accorded better with his philosophic mind had he put its powers, in that respect, to the test of experiment. In mixing it with alcohol, as I have before directed, I cannot say I have received any particular advantage from its use. Mixed with the

spirit it adds to its strength, so that lefs of the spirit is required to make it of the strength the eye can bear, and it also seems to bring on the hot sensation sooner; yet I have not observed but that the spirit answers as well without the camphor. Camphor seems to be a warm stimulant; but I know not any peculiar property it pofsefes to entitle it to such general use in disorders of the eye. I have several times employed a saturated solution of camphor in distilled water, in different stages of inflammation of the eye, without any benefit. It made the eye feel very warm almost immediately on dropping it into the eye, but it was succeeded by no alleviation of the pain, and appeared to do no good.

ZINCUM CALCINATUM, LAPIS CALAMINARIS, and TUTIA.

I have clafsed these three medicines together, because they have the same substance, zinc, for their basis, and differ only in their different degrees of purity. Tutia is

a very impure ore of zinc, lapis calaminaris much more pure, but the zincum calcinatum is a pure oxid of zinc, and is far more proper than either of the other, as an application to the eye. These medicines have been considered as astringent and styptic, upon no other grounds, I believe, but because if a small quantity of them is placed upon the tongue, they immediately give it a dry styptic feel. This happens from their requiring, in proportion to their bulk, a great deal of moisture to wet them, so that absorbing all the moisture that is upon the tongue, in that place, it naturally feels dry: chalk will have the same effect, and many other substances. The truth of what I have just said may easily be decided by experiment: wet any of them, and then place them upon the tongue, and they will be perfectly sapid, will have not the least effect upon the taste, and will appear quite inert. Is it poſsible, then, that these medicines can have any GOOD effect upon an inflamed eye? I think I must be

answered in the negative by every unprejudiced practitioner.

Since I have endeavoured to prove that the above medicines can do no good, I shall now go a step further, and maintain they frequently do a great deal of mischief.

Nature has been particularly careful to guard the eye from any foreign or extraneous substances that might injure or irritate it. It is defended, in the first place, by the eye-lashes, which not only prevent too great a quantity of light from paſsing into the eye, but by their motion, waft away any particles that were floating in the air, that might annoy it by being inserted between the lids. When, unfortunately, foreign particles have gained admiſsion, nature is still provided to ward off the injury, a plentiful secretion of tears is produced, and the offending substance is washed away. How injurious minute extraneous bodies are to an inflamed eye, I have frequently seen by persons walking when there has been no dust stirring

which at all affected a sound eye, yet whose inflammation has been much increased by the imperceptible particles of dust inserted between the eye.

After premising these remarks, I must observe, that it is a common practice to apply a lotion to the highly inflamed eye, of one of the above-mentioned medicines, in powder, but it has generally been powdered lapis calaminaris in rose water, or some simple water, with often a small quantity of camphor. This I have seen ordered by men who have ranked high in their profession. Now, I should be glad to know what good this favourite collyrium can possibly do. I can easily conceive it *can*, and *must* do much harm to an inflamed eye. The lapis calaminaris can be considered as an inert body only, and it will have just the same effect upon the eye as so much *common sand* ground to the same degree of fineness, which will be to irritate the eye, and much increase the inflammation.

They have no better effect when used in ointments.

ZINCUM VITRIOLATUM.

A solution of vitriolated zinc is one of the most common lotions in disorders of the eyes, and a very useful one it is. It is never of service at the commencement of a violent Opthalmy, but when the disorder is slight, or has been of some duration, with not much pain at the time, it often shews its good effects in a few applications. I am surprised, however, in the common manner of making it, that it ever was serviceable. I know that before I was acquainted how to properly prepare it, I very frequently found it produce so much pain and irritation that I was *very* frequently obliged to lay it aside. The principle complaint my patients made was, that it caused the eye to feel uncomfortably rough as if there were dirt in it. I knew the lotion I had sent was perfectly transparent, and I could not conceive how the eye, from that, could feel rough, but on desiring to see the bottle, there was a very copious sediment, which had been shaken up each time of using.

I requested the clear part only to be used, and it agreed. The common way of preparing the solution of vitriolated zinc, is to pour four ounces of boiling water upon twenty grains of zinc, and to filter the solution, when, generally, twenty or thirty drops of camphorated spirits are added, and the lotion is ready for use. I prepared four ounces in the above manner, omitting the camphor, and I filtered the solution till it was perfectly transparent. I then filled the bottle quite full, well corked it, and, to exclude it from the light, placed it under an earthen cup.—In twelve hours afterwards, on examining my solution, I found it transparent, but with a very copious greyish brown precipitate at the bottom of the bottle. I had taken care that it should neither be under the influence of light or air, that it might not be decomposed, by the zinc having its oxygen either increased or diminished, and by that means rendered more insoluble. With all these precautions there was a copious precipitate,

which, had it been shaken and applied to the eye, the insoluble parts would have much injured it.

"It has been observed by Mons. Berthollet, an excellent French chemist, that attraction or affinity depends much upon the *quantities* of the different ingredients in a compound; thus, though the sulphuric acid has a much greater attraction for the zinc than it has for the water, yet when twenty grains only of vitriolated zinc are united with four ounces of water, the attraction of the water for part of the sulphuric acid is greater than the acid for the zinc, and part is precipitated.

"That being the case, I thought a few drops of acid would again change the order of affinities, and the precipitate would be again taken up. I added, therefore, four drops of sulphuric acid to the solution, without ever agitating it, and in half an hour there was no precipitate, and it was uniformly transparent. If a drachm of spirit is added to the solution, it will pre-

serve its transparency for months. The addition of the four drops of sulphuric acid I consider as a very valuable improvement. It will prevent the mischief that must inevitably arise from the application of the insoluble precipitate being applied to the eyes, and I know I have been much more succefsful than I was before, in those cases in which the solution of vitriolated zinc was proper, since I have prepared it in the above manner.

PREPARATIONS of LEAD.

It appears to me, that preparations of lead have, of late years, very much lost their credit with the medical world, as an application in inflammations.

It is true they are ftill a good deal used by some people, perhaps, because they have been in the habit of applying them in certain cases for years, and by others because they know nothing better to apply, still they put not much confidence in them. At one time, on account of its very general

use, I applied it a good deal in inflammation of the eyes, but my success was so little, that I have long since given up using it. I have frequently, however, observed that after having freely used a solution of cerussa acetata for several days without benefit, on using spirit and water the eye could bear much more spirit, so that the lead had, in some degree, rendered the eye insensible.

Some who are partial to the use both of the solution of vitriolated zinc and a solution of lead, think two good things must be better than one, and they very injudiciously mix them together. On the moment of their mixture they become totally different from what they were before their union; the sulphuric acid of the zincum vitriolatum unites with the lead, forming a white insoluble precipitate, whilst the vinegar in the acetite of lead unites with the zinc, and forms an acetite of zinc. On being suffered to be at rest the sulphate of lead falls to the bottom, and there is a clear solu-

tion above of acetite of zinc. It is not this clear part, however, that is used to the eye, it is shook up and applied, so that it has the same pernicious effect as the calaminaris and water.

SULPHATE of COPPER and ALUM,

Are both used in eye waters with some advantage, and some prefer sulphate of copper to sulphate of zinc; but my little experience of the effects of sulphate of copper will not allow me to give an opinion of its properties.

The solution of sulphate of copper requires the addition of a few drops of the sulphuric acid to prevent a precipitation.

HYDRARGYRUS MURIATUS.

A solution of one grain of hydrargyrus muriatus to two ounces of water, has been used in those cases in which the aqua zinci vitriolata is applied, and with some success. Some have thought it more particularly applicable in those cases that are

called scrophulous, but I cannot say that I have observed it so, it generally appearing to irritate too much.

AQUA AMMONIÆ ACETATA,

I have frequently known used as an eye water, either by itself or mixed with a portion of water, but I could never perceive any advantage that was derived from its application.

COAGALUM ALUMINOSUM.

In excoriations of the lids and acrid humours of the eyes some practitioners are partial to the application of alum curd to the lids at bed time; but I should think they had not attended to its effects, otherwise they must have seen no advantage could have been derived from it. A quantity of the curd is spread either upon lint or linen and laid upon the lids, when it is lightly bound on with a roller. In three or four hours the curd becomes quite hard and dry, adhering to the eye lids, and causes much pain, and aggravates the dis-

ease, unless the patient's own good sense dictates to him the propriety of removing it as soon as it gives pain.

If it is wished to apply a something to the eye that may remain moist all night, the best thing is a piece of crumb of bread soaked in water, or any other liquor that may be thought more proper, placed between a double of linen, and lightly bound upon the eye. This will preserve its moisture for many hours, and if it should feel dry, the patient may easily pour some more of the liquid upon it. These kind of applications, however, had better be omitted, for the weight of the bread, or any thing else that is placed upon the eye, must irritate, and tend to make the complaint worse.

WATER.

Hot water, in the first stage of an Opthalmy, should be applied to the eye, for three or four minutes. In the more advanced stage, when used only to excite

the action of the vessels, its application for half a minute is sufficient.

Cold water ought never to be applied to the eye at the commencement of an Opthalmy. When the pain is abated, an occasional use of cold water to produce reaction may be of service. When there is very little redness and no pain in the eye, the patient, probably, may like to bathe the eye in water; I would have him try both hot and cold, and adhere to that which gives him the most subsequent ease, though warm water will generally be found most pleasant.

POULTICES.

I do not believe poultices are much applied to the eyes in the present practice; but, occasionally, they are, and deserve to be taken notice of.—I see no *harm* a *cold* poultice can do, independent of its weight producing irritation, which is sometimes considerable, but when the eye has been in violent pain, I have, more than once, known a *hot* poultice, applied but for one

night, produce such a suppuration in the cornea as has been the cause of its bursting. Though this might not happen in all instances, the danger of producing specks by a hot poultice is so great, as to render its application injudicious.

I suppose there is no occasion for me to make any observations on the properties of armenian bole, rose water, elder flower water, and some few others of a similar import.

It may, perhaps, be observed, that I have allowed very little merit to the different medicines generally applied to inflamed eyes, and that I have recommended no application to be used on the firft attack of Opthalmy, except my own, in the body of the book. If there are no medicines in general use which can be applied with advantage in that stage, the fault ought not to be attributed to me; and be it recollected that a few years ago, when a medical gentleman, in London, had the misfortune to badly scald himself, there was an im-

mediate consultation of his medical friends, to determine upon what was best to be done; when they were *uniformly* of opinion that they had seen no particular advantage arise from any of the applications in common use which they had applied in similar cases, and they recommended, with one voice, that he should apply, to the scalded parts, *cold* water only, with which he complied.

Thus have I completed my undertaking, in which I have endeavoured to give an accurate description of the Opthalmy, with the different diseased actions that take place in consequence of it. I have also pointed out new methods of cure, and treated of the best means of obviating the ill effects of the different diseased actions; in which, I hope, the diseases are treated in a more systematic and regular order than usual, and by which it will be seen, that those diseases of the eyes are by no means so numerous and complicated as is generally supposed. This has been my intention,

how far I have succeeded it is for the public to determine; but I can solemnly afsert, I have not intentionally deceived in the least particular, and that *every* method of cure that I have recommended, I have repeatedly put in practice.

FINIS.

ERRATA.

Page 172	2d	line from	bottom, *for*	to	*read* with
201	10th	do.	top, —	— —	felt hot and as
206	3d	do.	do.	lid,	lids
210	15th	do.	do.	distellatam	distillatam
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278	14th	do.	do. —	— —	direction by an awl

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